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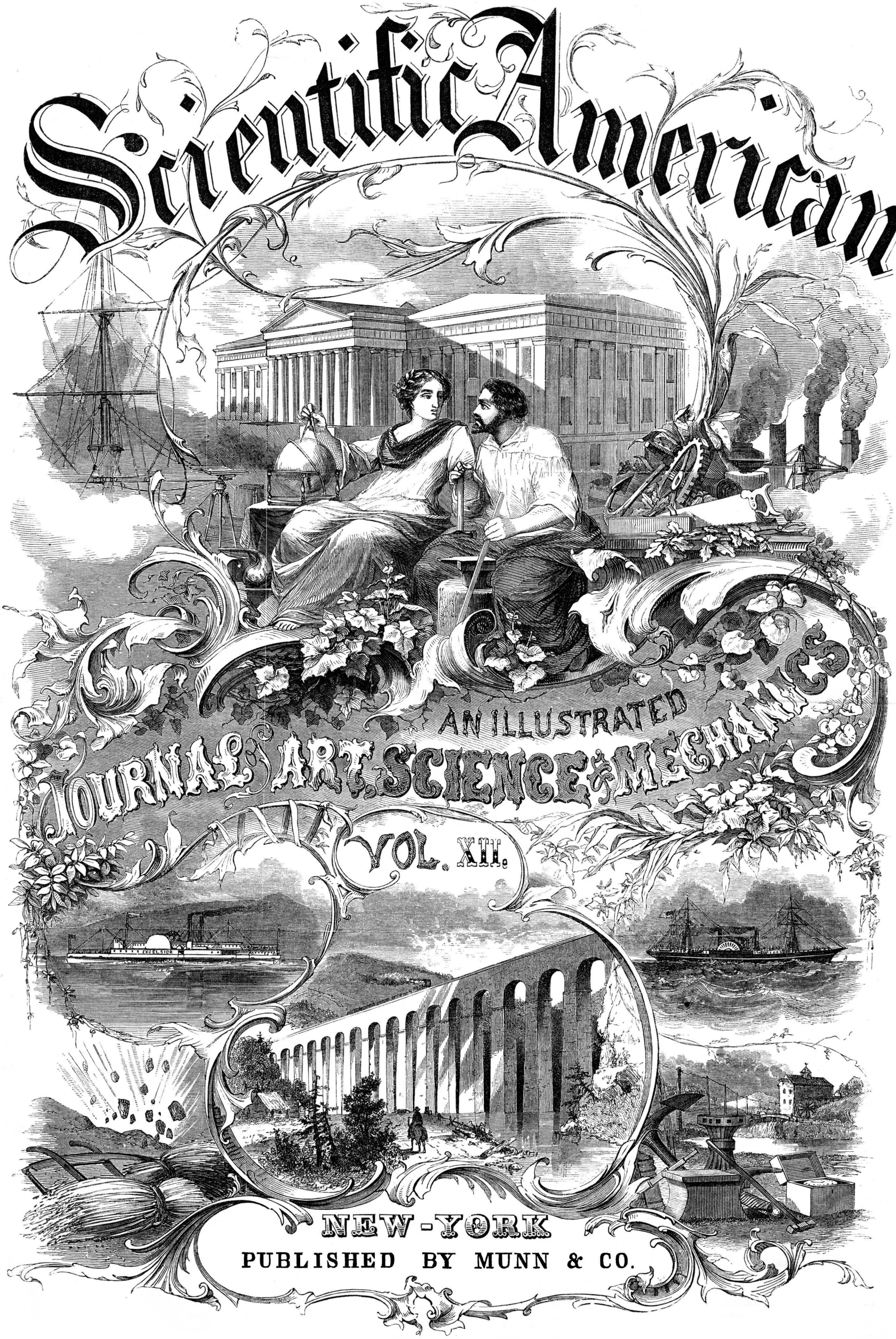

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VOL. XII.

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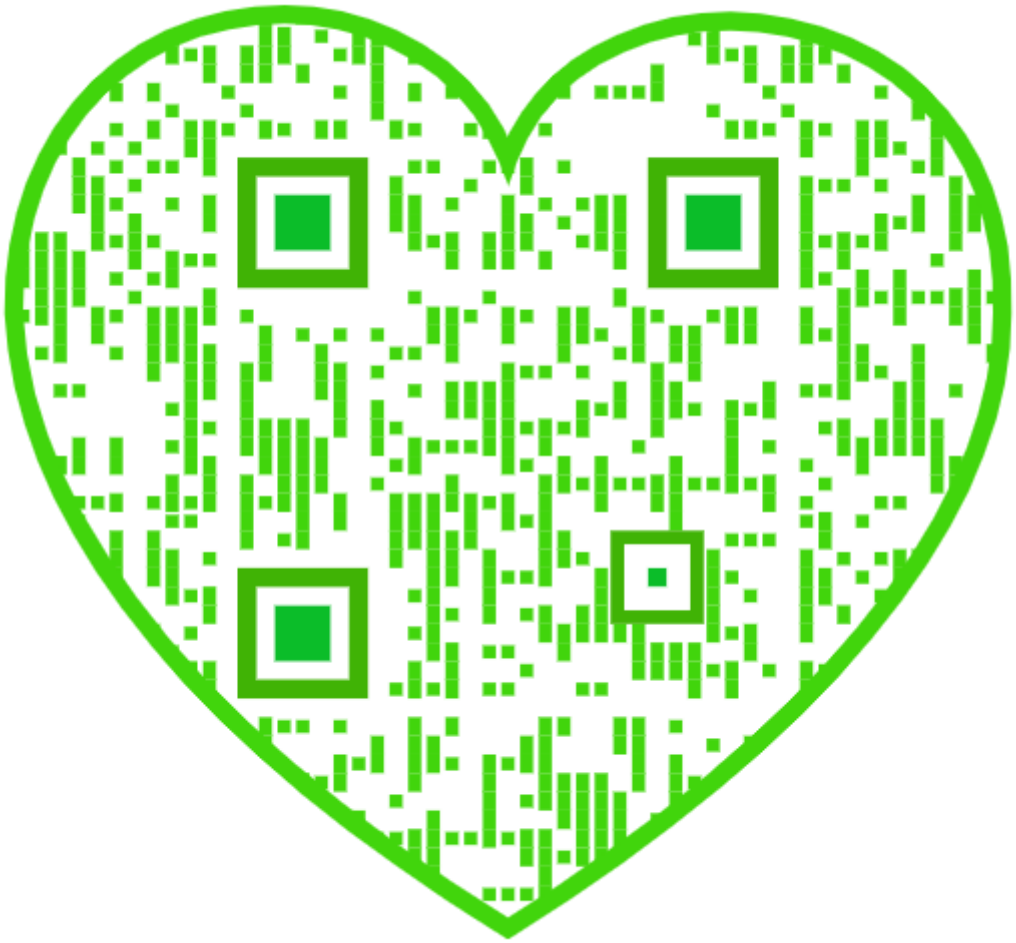

Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

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Trial of Reaping Machines in England.

A trial of Reaping Machines, under the direction of the officers of the Royal Agricultural Society, took place on the 13th and 14th of last month, near Colchester, England.—Four machines were entered to cut a field of wheat, consisting of 54 acres. The machines were a McCormick's, by Burgess and Key; a Bell's by Croskill; a Hussey's, by Deane & Dray; and a Palmer's.

All the machines were severely tested, on level and rolling ground, and on furrowed land, and worked well the whole time.

The Judges awarded £20 to Bell's; £15 to Hussey's, and £15 to McCormicks. In making the awards, the Judges said: "From the results of these trials, we regret to observe that very little improvement has been made in this class of machines since last year." They consider that for general harvest purposes, the machines of Croskill (Bell's), and of Messrs. Burgess & Key (McCormick's), are to be preferred; but for reaping only, they thinkDray's (Hussey's) decidedly the best machine."

A Prairie Steam Plow.

Bronson Murray, who has suggested the awarding of a prize of $50,000 for a successful steam plow for the prairies, and who has offered to subscribe $500, has published another letter in the *Prairie Farmer*, calling upon the rich farmers of Illinois to come forward with their subscriptions. He has received a number of letters from inventors on the subject, and is positive that such a plow will yet be invented. This is the right spirit. The best way to excite inventors to effort is to set before them proper motives and sufficient inducements. We hope the farmers of Illinois will respond to the noble suggestions of Mr. Murray.

Standing Tree Cutter.

Our engraving illustrates a novel improvement for cutting down trees, for which a patent was granted to Mr. G. C. Ehrsam, of New York City, June 25th, 1856.

The tree is encircled at its base by a strong iron ring, A, which is hinged, so that it may be readily opened and closed for adjustment. Screws, B, bear against the tree, and hold the ring firmly in place. The cutting is done by means of a cutter, C, which is carried round and round the tree by means of a circular rack, D. The rack fits into a cavity at D′ (fig. 2,) in ring A, and is moved by a pinion, E, power being applied to a crank in the manner shown.

The upper edge of ring A, is covered by a flat ring, F, which is hinged, the edges where it opens being brought together and secured by means of the projecting ears, G G. These ears are firmly attached to the ring, F. They are hollow, and through their interior passes the tool stock, H, which carries the cutter, C. I is a ferule, which holds the ears together.

The upper edge of the ring, A, has screw threads cut upon it, throughout its entire circumference (see fig. 2.) The lower surface of the tool stock, H, also has corresponding screw threads, which rest in and fit the screw threads of A. There is a depression in the top of rack, D, to suit the shape of the lower part of stock, H, so that when the rack goes round it carries with it stock H. The screw thread

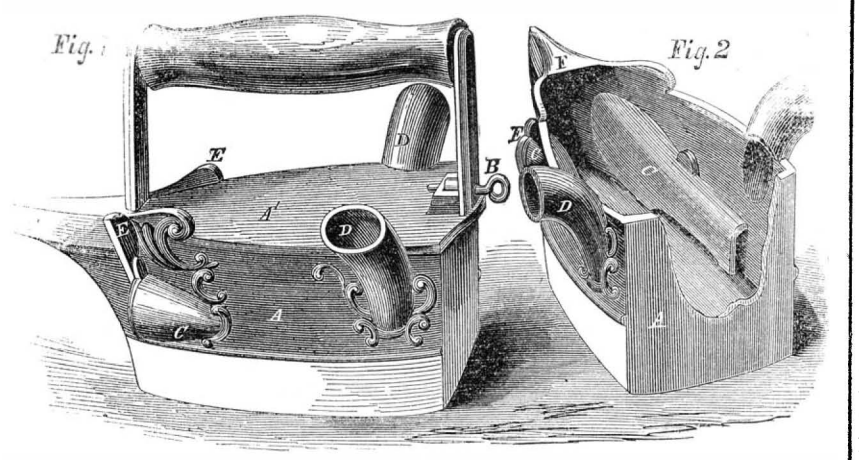
MACHINE FOR CUTTING DOWN TREES.

of stock, H, fitting, as before described, into the threads in the ring, A, it follows that when stock, H, is moved around it will also be fed inward towards the center of the tree. In this manner a steady, but very gradual inward feed of the cutter is produced, the advance of the tool stock at each complete revolution around the tree being only equivalent to the width of one screw thread.

This invention has been tested by a working machine, and found to operate with entire success. For cutting down locust trees and other species of valuable wood, it effects an important saving, as it may be applied so as to cut close to the surface of the ground. In some localities the loss of wood for want of some means of cutting close down is from $3 to $5 per tree.

Another advantage of the improvement is that the butt of the tree is cut off at right angles to the trunk, so that no recutting or resawing is necessary to fit the end of the log for the mill. The stump is also left flat, which hastens its decay. Chopped stumps are left with crevices, and become covered over with substances which prevent the entrance of moisture, and consequent decay. The inventor informs us that with the assistance of this invention he can cut down trees in less than half the time that the same can be cut with an axe. The parts are all simple, strong, and effective. The method of fitting the machine to the tree and again disengaging it, is convenient and quick. For further information address the inventor, No. 212 Broadway, Room 10, New York City.

IMPROVED SAD IRON.



Improved Sad Iron.

The invention herewith illustrated belongs to that class in which the fire for heating the iron is carried within the same. Irons of this kind are generally attended with a serious objection, to wit: the injury of the work by the blowing out of ashes when the instrument is moved. This is caused by a defective arrangement of the draft openings.

The improvement before us consists in such an arrangement of the draft openings that the ashes cannot blow out, no matter how quickly the iron is moved; an abundant supply of air is likewise constantly furnished to the fire, and proper combustion thus steadily maintained.

In our engraving, fig. 1 is a perspective view of a complete iron, A being the shell, and A′ the top or cover. In fig. 2 the cover, A′, is removed in order to exhibit the interior arrangements.

The fuel used is fine charcoal, which is deposited any where on the inside of the bottom of the shell. Access is had to the interior by removing the top, A′, which is conveniently done by taking out the key, B. C are the draft openings, which are cast in tubular form, and extend from the front of the iron, inward, to the rear part, as shown. D are the escape openings, placed immediately above the termination of the draft tubes. The openings, D, terminate, externally, on the sides of the instrument, and when the latter is in use there can be no ingress of air, as the mouths of D are never brought against the air. Both the draft and escape openings are so arranged that the ashes cannot, under any circumstances, blow out. The mouths of the openings, C, are furnished with valves, E, which may be opened or closed at pleasure, and the heat thus perfectly regulated. The front end or nose of the instrument, F, is shaped like a fluting iron, for which purpose it is intended to be used.

This invention is rapidly coming into general use, and is considered far superior to the sad irons commonly employed. Invented by Geo. W. Bishup, Brooklyn, N. Y. Patented May 6, 1856. Address or apply to D. Tilton, 39 1-2 South street, New York City, for further information.

Tunnel through the Green Mountains.

The Worcester, Mass., *Palladium*, states that the great Hoosic Tunnel, of the Troy and Greenfield Railroad, through the Green Mountains, is progressing with spirit. Messrs. Haupt and Galbraith, have contracted to complete the whole line, and they commenced active operations on the tunnel on the 1st of May last. They have now penetrated 200 feet into the mountain, and progress at the rate of between 4 and 6 feet per day, leaving the walls and ceiling of the tunnel in a very smooth condition. The work is done in three sections—one gang working in advance of the other. The first gang of ten men opens the headway at the top of the tunnel, 6 1-2 feet high and 14 feet wide, then follow the second and third gangs at intervals of about fifty or sixty feet, each taking the whole width and a proportionable share of the remaining depth, so that when the tunnel is completed, the aperture will be 21 feet high and 24 feet wide.

There are two sets of men,—one working by night, the other by day. No loss of time on account of the weather, summer or winter, and the work is to be pushed with the utmost vigor. The rock is mica slate, intermixed with quartz, and yields very readily to the drill and blast. It is a great work—one of the greatest of the kind ever undertaken in the world, and if completed it will be a triumph in civil engineering for which the American people may well be proud.

The Expected Comet.

The news by the last steamer from Europe contains an account of a comet seen by a gentleman at Limerick, Ireland, for several nights. The Limerick *Observer* states that it is the long-expected comet of 1556. It is our opinion that if such a comet had appeared, Limerick would not be the first place where it would have been seen. The observers in the observatories of Europe and America, with their powerful instruments, would rather get ahead of a casual star gazer.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING SEPTEMBER 2, 1856.

BUCKLE FOR WEARING APPAREL—Edward Parker, of Plymouth, Conn.: I claim, swaging or cutting the blank, or the bow A, and loop B, entire or in one piece, from a metal plate, and securing the tongue, D, in the buckle, by bending or closing the cross-piece, C, around the shank c, substantially as described.

ROTARY STEAM ENGINES—John Robingson, of New Brighton, Pa.: I do not claim the hollow shaft or piston-head, D, with a passage or passages in its periphery, to admit or carry off its propelling gas or fluid, as such; but with a lateral arrangement of said passages in relation to the radial piston, and employing a separate transverse partition in the hollow head, to form inlet and outlet chambers at opposite ends of the piston, has before been used.

But I claim, the arrangement of the piston G, projecting radically into, within or through the hollow head, D, and forming inlet and outlet cavities or passages, c', c', and b, b', on either side of it, across its whole breadth, or face, substantially as described, for the purposes set forth.

CANDLE MOLDING MACHINES—John Robingson, of New Brighton, Pa.: I claim, attaching a series of molds, I, to endless chains B B, which have an intermittent movement; the molds being formed of two parts, and opened and closed at the proper time by the jaws, J, operated for the purpose specified.

I also claim, drawing the candles from the molds, by means of the jaws n n, attached to the rod L, arranged and operated for the purpose shown.

I further claim, in connection with the jaws, (n) (n), the plate P, operating for the purpose of turning or conveying the candles into the receptacle Q.

CHURNS—Lewis Lamb, of Berlin, Conn.: I do not claim employing in a tub two concentric shafts separately, provided with one or more dashers to revolve with them.

But I claim, applying the auxiliary dasher to the shaft of the rotary dasher, without any other shaft, so that the shaft of the rotary dasher may revolve on the hub of the auxiliary dasher, in combination with applying to the inside surface of the tub, a stop or projection, or equivalent means, arranged as described, and by which the auxiliary dasher may be stopped from revolving with the other dasher, when both are placed in the cistern, and the churn is in operation, as described.

ALE AND BEER COOLERS—James McIntyre, of Somerville, Mass.: I do not claim connecting an ale or liquid so that the heated liquid, while descending in a channel between plates, shall be cooled by cooler currents of water or liquid made to flow in a contrary direction, against the outer surface of said plates or channel, as described.

Nor do I claim arranging the water and ale channels in a zig-zag, serpentine, or equivalent manner, with respect to one another, as described—so as to produce an effect as stated.

But I claim, the combination of the passages p n, and gate o, with the ale and water chambers, pipes m m, and zig-zag passages; the same being for the purpose, or to accomplish results as set forth.

CONDENSERS FOR STEAM ENGINES—David Matthew, of Philadelphia, Pa.: I claim, the combination of the flat vertical tubes, connected by horizontal tubes with new rose pipes inside, and surrounded by the outer case, to condense, by the combined action of air and water, substantially as described.

PROCESS OF STIFFENING HAT BODIES—Jos. McCracken, of Brooklyn, N. Y.: I claim, the process of stiffening wool hat bodies, by acidulating the hat bodies before applying the stiffening, as a means of graduating and controlling the quantity and depth to which the stiffener can penetrate the body of the felt, in combination with a pearlash solution of shellac for stiffening the "tip" or "crown," and a pearlash and sal soda, combined with a solution of shellac, for stiffening the "brim," substantially as described, and for the purposes set forth.

MANUFACTURE OF BLACK BOTTLE GLASS—John F. McCully, of Gonzales county, Texas: I do not claim as new, the process of re-heating the batch, as applied to the ingredients heretofore used for making black glass, but only as applied to and necessary for the batch, if the specified clay slate is used as one of the constituent ingredients.

I claim, the introduction of the above specified clay-slate as one of the ingredients in compounding the usual batch for the manufacture of black glass, in the proportion and in the manner as specified.

PLOWS—Benaiah C. Hoyt, of Port Washington, Wis.: I claim the adjustable rotary mold board, K K, combined with the beam, D, and frame, R, the whole being arranged in the manner described.

RAKING ATTACHMENT FOR REAPERS—M. G. Hubbard, of Penn Yan, N. Y.: I claim, the jointed rake bar, B, attached to the upright, f, and connected with the pulley, c, as described, for the purpose set forth.

MACHINE FOR TESTING AXES—Warren Hunt, of East Douglass, Mass.: I claim the described method for testing the trueness of axes—consisting essentially of the bar c, and slotted gauge plate E, operating in the manner substantially as set forth.

SPRING BEDSTEAD—Wm. H. Kimball, and Andrew J. French, of Lynn, Mass., (assignors to themselves and Amos K. Noyes, of same place): We claim, arranging and combining together and with the frame or bedstead A, the springs F F F, and their connection rods G G G, in manner essentially as set forth; the rocker bars D E, the levers B C B' C', bars D E, straining screw rod H, and crank nut I; the whole being made to operate substantially in the manner specified.

HARVESTING MACHINES—Wm. A. Kirby, of Buffalo, N. Y.: I claim, the combination of the main wheel K, single plate H, and rim L, when connecting and operating together in the manner and for the purpose as described; I also claim the hanging the seat to the plates H, and to the standard S, as described.

PEN AND PENCIL CASE—John H. Knapp, of New-York City: I do not claim the manner of operating the pencil slide, viz., by the spirally slotted tube H, and the straight slotted tube F, for that has been previously used, and the pen slide D, is also well-known, and in common use.

But I claim, placing the pen slide D, over or upon the tube B, which encloses the slotted tubes F H, the above parts being arranged as shown, so that the pencil slide is shoved out at the opposite end, and the working parts rendered so compact, that an extremely portable and extensive case is obtained as described.

CHARGERS FOR SHOT POUCHES—John M. Hathaway of New York City: I claim in combination with the slide of a shot charger a locking apparatus, substantially such as described, to prevent the accidental opening of the charger, but readily unlocked by the user, as set forth.

I also claim the slots, 1 2 3 4 &c., on the tube, B, and the tongue button and spring on the tube, C, in combination, as a device for adjusting and holding said tubes as set forth.

PLOWS—Joseph B. Harris, of Byhalia, Miss.: I claim combining with a sub-soil plow a mold board, movable to different hights, substantially in the manner and for the purposes specified.

ADJUSTABLE CUT-OFFS FOR STEAM ENGINES—Andrew Hartupee and John Morrow, (assignors to J. P. Haigh, Andrew Hartupee and John Morrow,) of Pittsburg, Pa.: We claim the combination of the T-shaped lifter, slide, screw and stops, or their equivalents, constructed and arranged as described, and operating as an adjustable cut-off for steam engines, in the manner set forth.

FOUNTAIN RULING PEN—Charles Ketchum, of Penn Yan, N. Y.: I claim, a fountain ruling-pen, substantially as specified.

BEDSTEADS—Charles H. Gould, of Concord, N. H.: I claim the within described spring bed bottom, constructed essentially of the slats, B, pivoted at the lower ends, the bar, C, springs, D, and band, E, operating in the manner substantially as set forth.

BORING AND MORTISING HUBS—Henry Hayes, of Quincy, Ill.: I claim, first, the adjustable frame, B B B B, with its attachments, substantially as described, and for the purposes set forth.

Second, the application of the rider, H, to the carriage, G, substantially as described and for the purposes set forth.

Third, the combination of the index, I, the lever, s, and the roller, t, substantially as described and for the purposes set forth.

CALENDAR CLOCKS—Edwin Allen, of Glastenbury, Conn.: I do not claim the lever, C, and stop pins, d, on the month wheel, as their equivalents are found in the calendar mechanism of John Williams, patented Sept. 19, 1854.

But I claim, first, the change wheel, E, and year wheel, F, or its equivalent fitted, as described, to rotate with the month wheel, B, and carrying the leap year wheel, G, occupying such a position on the change wheel as to represent the month of February, said change wheel receiving every month one twelfth part of a complete rotation on its axis, independently of the month wheel, and the leap year wheel receiving every year, in addition to its revolution around the axis of the change wheel, one-fourth of a complete rotation on its own axis, the movement of the change wheel and leap year wheel being produced by any means equivalent to those described, and the said wheels combined and operating upon the lever, C, substantially and for the purpose described.

Second, the internally notched ring, P, on the driving wheel, M, or its equivalent, that transmits motion from the month wheel to the yearly rotating month card, combined with the lever, Q, and its locking pin, i, and the pin, z, on the month wheel, the whole operating substantially as described, to lock the wheel, M, or its equivalent, and through it, the month card, till the time for moving the same, and then unlocking it as long as is required to effect the movement.

HARVESTERS—Hower Adkins, of Plymouth, Ill.: I claim the rake operated by means of the crank, N, and guide blocks, Q S, substantially as described for the purpose specified.

FEEDING PAPER TO PRINTING PRESSES—David Babson, of Groton, Conn.: I claim the stocks, m m, with points, n n, attached, said stocks being placed in a reciprocating frame, operating as shown and described for the purpose set forth.

COTTON SEED PLANTERS—D. J. Beecher, of Greenville, Miss.: I claim the combination of the endless series of arranged plates with the slotted discharge tube, constructed, arranged, and operating substantially as and for the purposes set forth.

ROTARY STEAM ENGINE—P. D. M. Carmichael, of Leroy, N. Y.: I claim the rotary engine composed of a piston with an eccentric rim, d d, whose interior fits at one point to the outer of the cylinder, and its interior at a diametrically opposite point, to a central circular block, D, said rim working within a slotted rocker, H, in an oscillating abutment, E, the whole operating substantially as set forth.

ARRESTING CARBON IN CHIMNEYS—Hezekiah Chase, of Lynn, Mass.: I do not claim the introduction of jets of water into a chimney, for the purpose of arresting sparks or carbonaceous matter, as I am aware that such has been accomplished before on the chimneys of locomotive engines. My invention is more properly an improvement on that for which letters patent were granted June 19th, 1837, to James A. Cutting and George Butterfield, of Boston, Mass. The most essential feature of my improvement and that which differs from anything in the apparatus of Cutting and Butterfield, being that part of my device whose office is to produce a thin sheet of water close to and surrounding the edge of a meniscus deflector placed over the mouth of the discharging flue within the chimney. Nothing of this kind is found in the invention of Cutting and Butterfield, wherein streams of water only are employed. In my improved smoke consuming apparatus I use streams and a deflector, as do Cutting and Butterfield, but in addition to the principle common to both, I so arrange the jet pipes that the jets of water may fall on the top of the deflector, and be discharged over its edge in a thin sheet.

I claim arranging the jet pipes, the deflector, and discharge flue so that the water may first fall on the top of the deflector, and be discharged in a thin sheet over its edge and around the mouth of the discharge flue, as set forth, and this whether the streams fall directly downward from the jet pipes and upon the deflector, or whether they may be first discharged upward, and next be caused to fall back and upon the top of the deflector, and so that such streams may serve not only to arrest carbonaceous matters which may escape or pass by and rise above the deflector, but to return them and cause them to be thrown into the receiver, B, after they have fallen with the streams upon the said deflector.

FILTER—David N. B. Coffin, Jr., of Newton, Mass.: I claim the method substantially as described of applying the filtering diaphragm, and also combining therewith the additional layers, as and for the purpose set forth.

STREET SPRINKLER—John F. Driggs, of New York City: I am aware that fixed perforated pipes have been employed for the purpose of sprinkling in many branches of manufacture, and that waste cocks have been provided in shower baths which open and drain the pipe with the closing of the main cock or valve. But I am not aware that any have attempted to employ such for the purpose of watering streets, or have ever attempted so to construct and connect an awning pole or a sign pole that it may serve this purpose

I claim the peculiar arrangement of the perforated and slightly inclined pipe, A, in connection with the uprights, C and B, or with equivalent brackets from the neighboring building, and with the valve, D, the waste passage, F, and the water main, E, when arranged in such a manner that it may serve the double purpose of supporting awnings, signs, lamps, etc., and of rapidly and effectually sprinkling the streets.

PURIFYING OIL—Cummings Cherry, of Pittsburg, Pa.: I do not claim any of the individual parts of my apparatus per se.

But I claim the arrangement of the horizontal retorts, I I, as conbined with the copper heads, J and L, of the rectifying chamber, Q, of the steam conduits to the oil boiler, and of the agitating apparatus, in the manner and for the purposes described.

DISTILLING CRUDE OIL—Cummings Cherry, of Pittsburg, Pa.: I claim providing upright retorts for the manufacture of oil from bituminous coal, with a closed top, and an opening at their bottom to be immersed in water, in the manner and for the purpose substantially as described.

DRYING OIL—Cummings Cherry, of Pittsburg, Pa.: I do not claim the admixture of litharge or rosin to vegetable or animal oils in the manufacture of dressing oil.

But I claim preparing the oil, and for the purpose specified.

HAY RAKES—Hankles Heaberlin, of Scipio, Ind.: I claim, the combination of the revolving rake with the adjustable spring bow, V, so that said rake may be set to trip, and be tripped with such variable motion of the foot, g, as may be desired; the whole being arranged and operating in the manner and for the purpose set forth.

HARVESTING MACHINES—Joel Y. Shelley, of Hareford, Pa., and Jas. Stauffer, of Hosensack, Pa., (assignors to Wm. Watson, of St. Paul, Min.): We do not claim, the supporting of the frame of a harvester, on two main wheels, in the manner of a cart, with a caster wheel in front of them, as the frame of a harvesting machine patented to Edward Badlaw, Jr., on the 18th day of Sept., 1835, is thus supported.

We claim, the combination of the driving wheel G, supporting wheel F, caster wheel L, hinged tongue K, and the main frame, when the said parts are arranged, and operate in relation to each other in the manner set forth.

WHIFFLETREE FOR DETACHING HORSES FROM CARRIAGES—N. N. Selby, of Fairview, Pa.: I claim, the application of the spring, b, the whole length of the whiffletree, and turned over at each end, forming loops for the harness tugs, in combination with the bolt f, pins j j, and fulcrum d, operated by the levers g and h, substantially as described.

BUCKLE FOR WEARING APPAREL—Wm. Slade, of Gum Creek, Ga.: I claim, the double-jointed buckle, constructed substantially as set forth.

GRAIN AND GRASS HARVESTERS—Oren Stoddard, of Busti, N. Y.: I do not claim the pivotted cutters K, irrespective of the peculiarity of their relative position or movements with each other, as shown.

I claim, the cutters K, pivotted to the finger bar D, and operated by the cams (a), on the shaft L, when said cams are placed in varying positions, as described for the purpose set forth.

INVALID CHAIRS—C. D. Faillant, of New-York City: I claim, the combination of the chair and adjustable drop or extension back, with the rack K, and adjusting or supporting rod, P, for the purposes substantially as set forth.

STRAW CUTTERS—Shelton M. Thompson, of Barry Co., Ky.: I am aware that the moving knives of straw cutters, have been held up to the fixed knives thereof, by means of springs, set screws, and other devices. I therefore make no claim to an adjustable or a yielding knife.

But I claim, the arrangement of the fixed knife B, the shaft A, and spring F, as described—whereby the revolving cutters are held as rigidly parallel to the fixed cutter, as if they were unyielding, and are as free to yield for the passage of obstacles, as those cutters which yield independently of the arms and shafts, by which they are carried.

SELF-WAITING TABLE—Abdelah Watson, of Falmouth, Ky.: I claim, the waiters D D, wire racks C C, and driving cord E, combined, arranged and operating, substantially as set forth.

CURTAIN FIXTURES—Ferdinand Wuterich and Conrad Hagan, of New-York City: We do not claim the application of a scroll spring, wound up by the running down of the curtain, and then drawing up the same by its recoils, as we are aware the same has been done before.

But, we claim, supporting one end of the shaft, N, in a movable slide, E, connected with the lever G, which is made to act upon the cam F, as described.

CUTTING DEVICE FOR HARVESTERS—C. Wheeler, Jr., of Poplar Ridge, N. Y.: I claim, attaching the fingers, C, to the finger bar, B, and the caps, D, to the fingers, as shown, and having a plate, E, placed on each finger—on which plates, the teeth (f,) of the sickle, rest, and work; the whole being arranged as described, for the purpose set forth.

BORING HUBS FOR BOXES—Sam'l H. Yocum, of Shelbyville, Ind.: I claim, operating the bits, e e, by the adjustable feed rods, n n, and lever m, with the mechanism described, or its equivalent, in combination with the eight anti-friction wheels c c c c c c c c, temper screws o o and k k, that confine the hub D, and expose a true circle to the bits, e e, at any desired distance from the hub.

RE-ISSUE.

HANGING AND STRAINING RECIPROCATING SAWS—Isaac N. Forrester, of Centerville, Va.: Patented Oct. 30, 1855: I claim, the manner of hanging reciprocating saw-blades, by forming thereon, or by attaching to the ends and front edges thereof, ears or guide flanges n n, fig. 2, hook clamps q q, and shank devices, r, r, t, fig. 4; so that the tension or strain, and the draft of the blades will be in a direct line longitudinally, through the base of the teeth and front edge of the blade, whereby the whole of the surface, or the plate part, of the saw-blade is left free, unstrained, and divested of all rigidity, and stiffness, substantially as described.

I also claim the adjustable guide plate, with the slotted or grooved gauge pieces, g g, fig. 1, and x y, x y, fig. 3, as set forth.

Robert Fulton.

A new biography of this eminent man—the first who built a really practical steamboat, and established steam navigation—has just been given to the world by J. Franklin Reigart, of Lancaster, Pa. The author has devoted much labor and research in producing a complete history of Fulton and his inventions, and he appears to have done so in the spirit of one who loved his subject, and it does him great credit in every particular.

Fulton was born in Little Britain (now Fulton,) in Lancaster Co., Pa., in 1765. His father emigrated from the north of Ireland, and was a descendant of the Covenanters, who emigrated from Scotland to Ireland during the persecution. Robert received a common school education, and at an early age exhibited a fine taste for drawing and mechanism. At 17 years of age he became a professional artist in Philadelphia, but being consumptive, in a few years afterwards he was induced to take a voyage to England for the benefit of his health. In London he was kindly received by Benjamin West, his countryman, and painter to King George III.

His remarkable mechanical genius soon made him known to Lord Stanhope and the Duke of Bridgewater—men of mechanical tastes—and he was soon distinguished by his great neatness in drafting, and ability as a Civil Engineer. He was a dweller and a wanderer in Europe for many years, gaining much experience in courts and camps, but his mind was all the while taken up with the great idea of steam navigation, and rendering his native land immortal by its first successful application. This he accomplished successfully in 1807. His first boat, the Clermont, was built and launched in New York. James Watt, built the engines for it, according to Fulton's plan, and thus the genius of two great men were blended and combined, in this, the glorious result of steam navigation.

Some have endeavored to detract from the justly earned fame of Fulton, by setting up claims against him of not being the original inventor of steam navigation. Mr. Reigart does not set up any such claim for him, but justly places his claims upon the proper basis of having rendered it successful by his improvements, after many others had failed to do so. This is enough to render his name famous forever, as the "Father of Steam Navigation." Much credit is due to Miller and Symington, and others, for what they had done before him, but without detracting from their claims, Fulton's name must rank above theirs in the scroll of great inventors.

The volume is beautifully illustrated with fine colored engravings of the various steamers which Fulton built, and with copies of his original drawings and paintings, and a portrait of himself. It is a valuable acquisition to the literature of our country. Fulton sleeps under a plain slab in Trinity Church yard, in this city; but he has a monument in every steamboat on our waters.

August Storms

It is a remarkable fact that between the 1st and 24th of August a severe storm of wind and rain visits our country every year. It generally commences in the Gulf of Mexico, and proceeds in a curve round the Atlantic coast, and penetrates hundreds of miles into the interior. The storm this year was the most severe that has taken place in a great number of years, and committed great ravages. It is also somewhat remarkable that severe storms visit England in the same month. Great freshets take place, the same as have been experienced this year in so many districts of our country. Of old they have beeen designated 'Lammas floods'—Lammas being the name for the 1st of August.

Making Watches in Switzerland.

A large proportion of the work bestowed upon the manufacture of watches in Switzerland, is done by cottagers, who cultivate the earth in the summer, and in the winter shut themselves up with their families during the inclement season, which lasts three or four months. The whole family then devote themselves to the work of making watch movements. Not only the children work, but the dog turns a wheel and puts in motion a lathe or a pair of bellows. First, the rough part of the movement is made by water power. Particular parts are assigned to the young members of the family; while others are employed in putting the plates and wheels together. When a sufficient number have been prepared, the master transports them on the back of a mule to some town or village, where he sells them to little master watch-makers, who complete the movements, or else they are sold to travelling agents, who case them in silver or gold.

Crops in Europe.

The late news from Europe describe the harvests as being nearly completed, and the crops excellent. In France, where it was supposed the crops would be much reduced by the great indunations in some of the valleys, they have turned out to be very good. It is believed that the average yield will exceed that of 1855.

New Lighthouse.

A screw pile lighthouse has been erected on the spit abreast the Narrows of Boston Harbor. It is a hexagonal structure elevated on seven iron piles, and is surmounted with an iron lantern. The light is designed to clear the spit by vessels passing through the main ship channel. It is illuminated with a lense light of the sixth order, elevated 35 feet above high water mark.

Russian Rails.

The Russians have commenced to manufacture rails for their railroads, and they are said to be superior to the English, although somewhat dearer. Prior to the late war all their rails were imported from England. Two great proprietors of Russian forges have engaged to to manufacture all the rails required for the new railroads.

Knives should never be dipped into hot water, as it injures the handles. They may be placed upright in the water in a mug, by which plan the handles will be kept dry.

Never let waste vegetables, bones, &c., accumulate in an an ash-pit near to the house; they generate injurious gases.

The human system, in its vital or muscular power, is very analogous to an electric machine.

If metallic iron is boiled in a solution of sulphate of alumina, the iron will dissolve, and a sub-sulphate of alumina is thrown down as a white precipitate.

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Proceedings of the American Association for the Advancement of Science.

This Association is looked upon by the great mass of our people as the embodied representative of American science, but in our opinion its proceedings come short of entitling it to such a distinction. Its Eighth Annual Meeting, recently held in Albany, N. Y., was the largest ever witnessed, and more papers were read and more discussion elicited than at any previous meeting. Reports of these have been circulated by the daily papers in awful quantity throughout the length and breadth of the land, and to us they appear to misrepresent the real practical scientific characteristics of our people. What is science but well arranged facts derived from study and observation? It is not mere speculation—hypothesis,—it is positive truth. This being the case, those papers on merely speculative subjects read and discussed at the late meeting of the Association, were little better then idle reveries. Hours were spent in discussing whether the worlds of the solar system once existed in the form of gas, and whether the matter of the asteroids once revolved as a huge flat disk. How vain, for it never can be positively determined how the worlds were made. Conjecture and calculations respecting a state of matter that may *never* have existed is not science.

The undue prominence given by the Association to papers of no practical utility whatever, has characterized all its meetings. Agassiz is justly, we believe, characterized as the greatest naturalist living, but really, the information which even he has presented is more curious than useful; and the same may be said of the great mass of the papers presented at the late meeting; they were ponderable in quantity, but imponderable in quality. The world would have lost nothing useful had they never been made public.

The ideas of some of the *savans* seem to be as fossiliferous—so far as they relate to useful information that would benefit mankind—as the fossil elephant, mastodon, megatherum, and hippopotamus.

One of the most useful papers read was by Prof. Henry, of the Smithsonian Institute, on the proper mode of constructing public buildings, according to the laws of acoustics, for speaking; and yet, one of our daily papers stated that "it was more a practical than a scientific paper," and this, we suppose, is just the idea which too many have of science. We contend that science is scarcely worthy of the name if it is not practical; hence we assign the chief place to that kind of information which is the most useful and practical.

No papers were read on new discoveries in chemistry relating to its applications to the arts; none on any of the great manufacturing interests of our country, which require so much real science to conduct and carry on; none on civil or mechanical engineering; none on practical mining; none on shipbuilding; —none on any of the useful arts whatever.

We hope that the succeeding meetings of this Association will be more fruitful in the elemination of new and useful discoveries than the past, and that science in *deed*, and not in name, will characterize all the papers which may be presented.

The following continues the condensed extracts of some of the most interesting papers read, from page 410, last Vol,

New Astronomical Instrument.—Mr. Alvan Clark, of Cambridge, Mass., read a paper on a new instrument of his own invention for measuring the distance apart of stars too distant to be brought into the field of view of a telescope. Within a year from the first thought of the instrument entering his mind, he had built a telescope of six inches aperture and 103 inches local length, mounted it equatorially, governing its motion by Bond's spring governor clock, provided the two eye-pieces, and as a substitute for a filar micrometer, arranged a mode of using pieces of glass ruled with a ruling machine. Experiments had demonstrated the feasibility of using the two eye-pieces in this way, and of obtaining by them very accurate measures of the distances of stars, which are from three to one hundred minutes of space apart. The success of the instrument was, however, greatly due to the spring-governor, which keeps each star upon the wire accurately bisected.

Prof. Pierce rose and said that the new mounting of the telescope—a modification of the Munich—was exceedingly beautiful, more so than even the Munich, and vastly superior in convenience and value. The spring governor also was put into the best condition for good action there, the heavy mass of the telescope acting directly as a balance wheel, and controlling all irregularity of movement. In short, the instrument satisfied all reasonable requirements for equatorial mounting.

Prof. Hackley bore testimony to the value of the instrument, which he also had visited.

A Great Barometer.—Prof. Henry, of the Smithsonian Institution, read a paper upon a large barometer in the hall of the Institute. Attempts have several times been made to form barometers of water instead of mercury. One was by Prof. Caniell, in the hall of the Royal Society, in which a glass tube was employed, filled with boiled water while in a boiling state—the lower surface of the water was covered with castor oil to prevent contact with the air, but this precaution was found not to be sufficient. Air was absorbed by the oil, and the nitrogen of this air absorbed by the water. Another atttempt was made to exclude the air by a thin film of gutta percha left after the evaporation of naphtha. But a valid objection to water arises from the vapor which will fill the top of the tube. Prof. Henry had decided to use sulphuric acid which does not give off any appreciable vapor, nor absorb any air. The objections to its use are the liability to accident, and its affinity for water. But care can guard against accident, and the moisture can be aborbed from the air which touches it by a drying tube apparatus containing chloride of calcium. The construction was intrusted to Mr. James Green of New York. The tube is two hundred and forty inches long and three-fourths of an inch in diameter, inclosed in a brass case two and a half inches in diameter. The mechanical details of the instrument we need not repeat. The whole of the apparatus is inclosed in a glazed case one foot square.

Electrical Experiments.—Professor Henry described a most interesting set of experiments with electricity. He has discovered conclusively that there are not two kinds of electricity, according to Dufaye, but that it is an indentity—rather a force or an ether that operates in oscillations by direct and reflex motions. He has discovered that thunderstorms exert an influence over a great extent of country. He magnetized needles by thunder storms seven or eight miles distant. The principle of magnetising a needle he explained by considering that if the direct wave of the fluid or electricity imparted say 50 units of magnetic force to the needle, and the reflex wave took 10 units from it, then the next direct wave imparted 5 units, the expression would be $50\ p.-10\ n.+5\ p.=45$ units of magnetic force with which the needle would be magnetized.

One night a terrific thunder storm took place in Washington, and being in the Smithsonian Institute he heard some loud noise, as if something was knocked down in the tower, which is over 120 feet high. He sent up a man to see what was the cause, who, after going up and making an examination, came down, and reported that nothing was injured, but that he heard a loud hissing noise, which he could not understand. The Professor mounted up to investigate the phenomenon, and found the point of the conductor glowing with electricity, and the hissing noise proceeding from the rod. He attributed this to the successive discharges of the fluid producing an intermittent vacuum around the rod, and that the small explosions were produced in some such manner. His experiments also led him to conclude that it is not safe to carry electric conductors down through the holds of vessels, because sparks are liable to be given off from them, and these might ignite a cargo of cotton or other combustible substance. He thought it would be more safe to connect the conductors outside with the sheathing of the vessel.

This Association adjourned on the 29th ult. to meet on the 12th Aug. 1857, at Montreal, C. E. Prof. Bailey of West Point, was elected President for next year. Vice President, Prof. Alexis Caswell, of Rhode Island. General Secretary, Prof. John Leconte, of South Carolina. Permanent Secretary, Prof. Joseph Lovering, of Cambridge.

Preserving Timber.

MESSRS. EDITORS—In an article on "Boucherie's Process for Preserving Wood from Decay," in your issue of August 23d, you state that "in Lowell there is a factory for preserving timber by the use of a solution of chloride of zinc (Burnett's process) which is a good preservative, but this is the only factory of the kind, we believe, in our country, thus showing that there is little demand for preserved timber," &c.

It is true that timber is so plenty that the subject of preserving it could not be expected to receive the same attention here as in Europe, still you will doubtless be gratified to learn that the factory above mentioned is *not* the only one established in the country.

The Vermont Central Railroad Co. has, at Northfield, an extensive apparatus for "Burnettizing" ties, bridge timbers, &c. Many thousand ties preserved by this process were laid down four years since upon their road, and as yet exhibit not the least signs of decay. Our telegraph company has had some poles so prepared this season, by way of experiment. The expense does not exceed sixteen cents each.

It is beginning to be felt that telegraph lines, to pay, must be substantially and reliably built. There is an increasing demand, by companies, for the most durable kinds of timber, and I doubt not that the "Burnettizing," or some other process for its preservation will, at no great distance of time be generally adopted. J. H. NORRIS.

White River Junction, Vt., Aug. 21, 1856.

[We are obliged to our correspondent for the above letter. After many inquiries we were unable to learn of any establishment for preserving timber in our country, excepting the one at Lowell. It affords us pleasure to hear from him of the one connected with the Vermont Central R. R., also the testimony he has presented as to the value of this method of treating timber. We are confident that all our large railroads would find it profitable to adopt the same means to preserve their railroad ties, &c.

Improvements in San Francisco.

MESSRS. EDITORS—In this city the extensive metallurgical works of Messrs. Wass, Urnay & Harasty commenced a few weeks ago. They purchase the *tailings* from quartz mills, and operate upon them to extract all the gold. Hitherto these tailings were thrown away at the quartz mills; they are the refuse of the gold quartz after it has been operated upon with mercury by the miners. It has long been known that these tailings contained much gold, but the question was, how to extract it. In the works named above, these tailings are melted with fluxes, and the gold recovered. It is believed that millions of gold which was formerly considered lost will now be obtained.

The great idea of building a bridge over the Bay of San Francisco to Contra Costa—a distance of at least ten miles—is now mooted in this city. A company has been formed to carry out the project, and application for a grant has once been made to the Legislature, and will be renewed.

A large sugar refinery is also about to be built, so that, you will perceive, our industry, our arts, and manufactures are progressing amid all the turmoil and exciting scenes with which we have lately been visited.

J. MOSHEIMER.

San Francisco, Cal., Aug., 1856.

Spontaneous Combustion.—Valuable Warning.

MESSRS EDITORS—In No. 51, last Vol. of the SCIENTIFIC AMERICAN, I observed an article on the Spontaneous Combustion of Sawdust used as packing around steam pipe. Having a large steam pipe packed with it, I proceeded without a moment's delay to examine it, and found the dust completely charred, apparently ready to ignite. Of course, I ordered it removed at once. Believing that this one article may have saved my property, amounting to many thousands, I think it will be only a little short of *absolute insanity* to be without so valuable and faithful a monitor. And every business man—yes, in fact, every man who desires to succeed in the world, would find a very great auxiliary to his success by taking and carefully reading the SCIENTIFIC AMERICAN. G. W. SMITH.

Glen Aubury, Broome Co., N. Y.

Coal Burning Locomotives.

MESSRS. EDITORS—In No. 50, Vol. 11, SCIENTIFIC AMERICAN, there are two notices of Coal Burning Locomotives. I never thought before that master mechanics and the officers of railroads were so ignorant of the manner of consuming coal in locomotives. Mr. Clark, of the Illinois Central R.R., has put the company to some unnecessary expense in the alteration of the engine in question: all that was necessary for him to do was to take a bar of wrought iron four inches deep and one inch thick, and forge it into a frame for the bars to rest upon, and also make grate bars of the above named bar iron, and put them in the furnace one inch apart. These raise the grate high enough, and fit it to burn coal. And in order to keep the smoke box clear of sparks, all that is necessary is to put a lifting pipe (like that which Ross Winans uses in the smoke box of his engines), and curve the exhaust pipes to suit. EDMOND MAHONY,

Alleghany City, Pa.

Magnetism of Railroad Rails.

MESSRS. EDITORS—On our railroad here there is an uphill grade, running N. W.; of 80, or 90 feet to the mile, on which each of the individual rails are magnets—the upper end a south pole and the lower a north pole. I presume all railroads are the same that have an inclination, no matter what direction they run, or from what mine the iron came from, because there is a law of magnetism that all bars of iron become magnets the moment you raise them from a horizontal position. The lower end becomes a north pole and the upper a south pole. This is north of the equator, but south the opposite. This magnetic law has not been considered enough on board vessels in relation to local attraction, and has doubtless been the cause of their running on shore sometimes. J. O.

Bloomfield, N. J., Sept., 1856.

Main Springs of Watches.

MESSRS. EDITORS.—I received a watch lately in order to set it in repair, and found the main spring broken into as many parts or pieces as there were coils around the reel.—The fracture formed a straight line from the center to the circumference. I examined it, and found that it could not have been effected by a visible tool. During twenty years experience I found no main spring broken at more than one place at once. I supposed that electricity had done this. When I inquired, the owner said that he stirred something in the watch with the blade of his pen-knife, which was magnetized. Does not this fact indicate a powerful effect upon cohesion? To all acquainted with magnetism, &c., it is well known that other parts in watches are greatly affected by this agent; and as I have for many years seen no remarks upon this point in public prints, some good hint would, no doubt, be of value to many of your readers, though the most of them may be familiar with these matters, a demonstration of so plain and so instructive a fact should induce more carefulness with valuable watches than is usually bestowed upon them. HENRY ZUPPINGER.

Bloomsburg, Pa., Sept., 1856.

Barometers.

MESSRS. EDITORS.—I see by a late number of the SCIENTIFIC AMERICAN, that a correspondent in Indiana states that he has a barometer which does not operate correctly. It may not be a good one, but I think the barometer requires to be marked in some respects according to latitude. I have one that I bought of Capt. Eldridge, of the Collins line of steamships; it was made by Blunt, of New York, and with but one mark upon it, and that was 'change." Other marks I have put on myself, and I must say it will indicate the changes of weather correctly ninety-nine times out of a hundred. I have owned it two years.

T. B. JOHNSON.

Medford, Mass., Sept., 1856.

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New Inventions.

Improved Drawing Instruments.

Our engraving illustrates an improvement which is designed to facilitate draughtsmen in the ruling of parallel lines. It consists in a device for moving the rule over the surface of the paper, the arrangement being such that the instrument traverses a certain distance at each pressure of a trigger. Parallel lines are thus ruled with great rapidity and exactitude. There is also an arrangement for graduating the distance between the lines, which is highly useful in parallel shading.

Figs. 1 and 2 illustrate a triangular rule, for ruling parallel lines, fig. 1 being a perspective view, and fig. 2 a sectional elevation, showing the mechanism for moving the instrument.

A is a slide, the bottom of which projects through a slot in the rule, B, and rests on the surface of the paper. The bottom of A is covered with india rubber so as to form a better frictional combination with the paper. C is a trigger hinged to the top of the rule at *a*, and connected by means of an inclined rod, D, with the top of A. When trigger C is pushed down, the slide, A, is pressed firmly upon the paper, and held, serving as a fulcrum, the inclined rod, D, acting as a lever to carry the rule forward.

The rule thus moved being held by the finger from slipping back, the trigger is released, and the slide, A, is brought back to its first position by means of a spiral spring, E, which is attached at one end, A′, as shown. The trigger being thus alternately pressed and released, the rule is caused to travel over the paper, step by step, and the lines drawn by its edge, will all be equi-distant from each other. The great convenience of this improvement will be apparent when it is remembered that the ordinary method requires the pricking off of each line by the dividers, in order to render them accurate.

The space between the lines is changed by means of the cam button, G, which may be turned against the end of the slide, A′ so as to regulate the distance moved by the rule at pleasure. A′, it will be observed, projects up through the top surface of the rule, in order to meet cam G, which is conveniently located.

Fig. 3 shows the application of the improvement just described to a T-square, with the addition of a self-acting attachment, which alters the space between the lines ruled. This is useful in all kinds of linear shading, as for example in drawing cylinders or columns. The mechanism for moving the rule is substantially the same as that just described, the slide, A, being placed in front so as to rest on the edge of the drawing-board. The alteration in the space between the lines is accomplished by having the cam, G, (figure 3,) made in the form shown, the slide, A, being connected with another slide, H, having a follower, I, which bears against the surface of G. J is a rod attached to cam G, and K another rod, through one end of which J slides ; the other end of K is furnished with a pin button, L, which is affixed to the surface of the board, and remains stationary. When the trigger, C, is pressed, the square advances, and in consequence of rod, K, being fixed at one end, rod J moves and turns cam G; and the cam, G, acting on the follower, H, the rule can only move further or less, according to the configurations of the cam. The lines ruled may thus commence very fine and gradually widen, as desired, and vice versa.

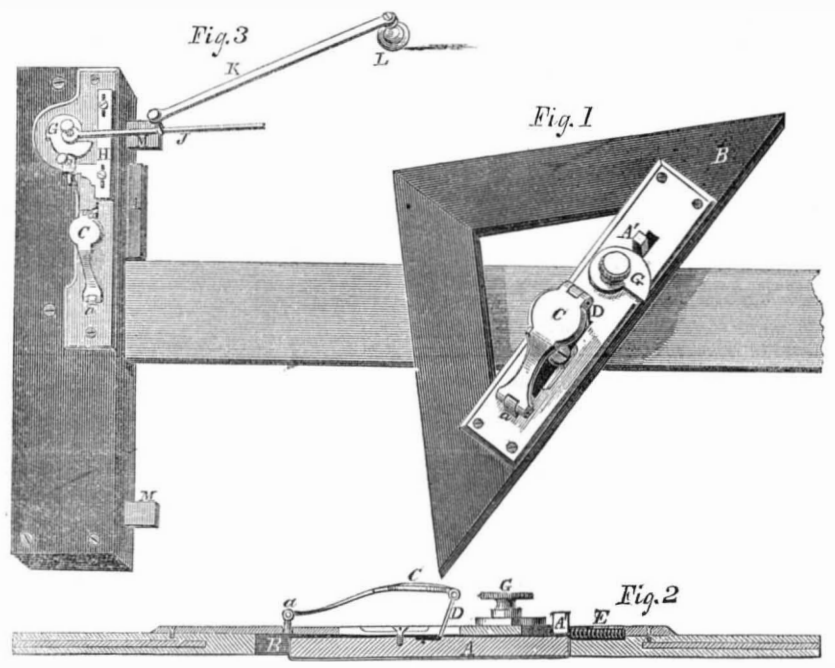
To illustrate the uses of this improvement, let us suppose we have a number of window frames with sash, &c., to be laid out. The right position of the window frame is given, and we want to finish up the window. Let us suppose the engraving is made three-eighths by one foot, and the frames are ten by six inches wide, then set the square so as to move three-tenth inches, and bring the edge to the already given point ; draw one line, say the inside one of the window; give the trigger, C, a pressure, which will move it three-sixteenths of an inch, then draw the second or outside line, and so on until it is completed. This saves at least one half of the time it would take to do the same in the old manner, and does the work better, because the square will move just such a distance, consequently the lines will present a uniform character, and give the whole an appearance of accuracy and neatness.

Again, suppose a builder has to furnish the lumber plan for a floor, the size of the joists is the same throughout, and the distance between the different timbers is likewise the same—then we would set the square so as to move by each pressure the size of the joists, and one space, then draw a line, and mark the size of the joists to the first line drawn, repeat the same and you will have all the lines exactly the same distance apart as the first two lines —so the draughtsman is enabled to do double the amount of work, and better, because there can be no variation in the movements of the T-square. The mechanical draughtsman is often called on to shade a section of some part of a building, or machine; with a brush and ink it would be disfigured, while a line shading would be an ornament to the drawing ; but it is so very difficult to give the line shading a uniform appearance that most draughtsmen have abandoned it altogether. The square, with the aforenamed apparatus attached to it, will make line shading more handy and economical than any other. The same ink used for common lines can be used for shading.

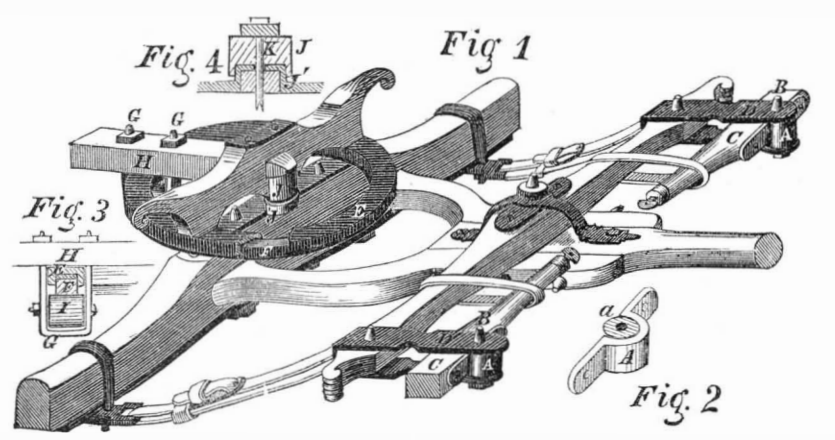
For machinists and draughtsmen this improvement is quite indispensable; there is a call for such an instrument in every screw or bolt, where he has to represent a thread, and where he has now to move his square or triangle by the eye, or waste hours after hours in measuring the size of the thread for a small number of screws, which, with this apparatus can be finished in as many minutes. In drawing machines, where a part is shown in section, line shading is at once the only shading that will most accurately define the various portions.

The simplicity of the whole arrangement is such as to enable any person to become perfectly familiar with its use in a very short time. Invented by R. Eickmeyer. Patented March 11, 1856. For further information apply to J.T. Bates 208 Broadway, N.Y., room 10.

IMPROVED DRAWING INSTRUMENTS.



IMPROVEMENT IN CARRIAGES.



Improvement in Carriages.

The improvements illustrated in our engraving are the inventions of Mr. Geo. Kenny, of Milford, N. H. They consist, firstly, in a method of preventing all rattling of the whiffletree. This is done by filling the clip piece, A, with rubber or other elastic substance, the bolt, B, which connects the whiffletrees, C, with the hounds, D, passing through the rubber. In fig. 2, which is enlarged, A is the clip piece, and *a* the rubber. It is obvious that the rubber will not only prevent all noise, but also obviate wearing of the parts. It likewise acts in part as a spring upon the whiffletrees, preventing any unnecessary movement, always keeping them in place, etc. The expense of this improvement, both in first cost and for any subsequent renewal, is quite insignificant, but the advantages secured are important.

The second improvement relates to the construction of the fifth wheel, the upper section of which, E, is made with lips, so as to cover the lower section, F. A washer of leather is introduced between the two surfaces, and the entrance of dust and dirt is thus prevented. Additional strength is also given by this plan, to the fifth wheel, a good, smooth, easy bearing always preserved, durability increased, etc.

The method of combining the sections of the fifth wheel is also an improvement. It usually consists of a simple loop, G, attached to the reach, for the purpose of holding up the lower section, F. The novelty, here, consists in furnishing the loop, G, with an elastic rubber roller, I, which bears up against the lower side of section F, and keeps it constantly in contact with E. See fig. 3.

The transit or king bolt, K, which unites the body of the vehicle to the front wheels, is generally subjected to great strain, but is here entirely relieved. (See fig. 4.) It passes down through the center of a box, J J′, one section of which fits into the other, with a washer between. The strain which commonly falls upon the king bolt is thus sustained by the lips of the box, J J′, and they are so closely fitted that no dust can enter. The durability, tightness, and safety of the king bolt is thus greatly increased.

We have seen certificates from a number of persons who have these improvements in use, and they speak of them in the highest terms of commendation. They are devices which will unquestionably render all vehicles, to which they are applied, safer from accident than they otherwise could be, besides saving time, trouble, and much expense for repairs. Address the inventor as above, or Geo. N. Davis, 152 Congress street, Boston, Mass., for further information. Patented July 29, 1856

Improved Nautical Instrument.

We havelately examined an ingenious instrument by Ralph Reeder, of Cincinnati, which combines three important uses: first, it exhibits to the eye, at a glance, the local variation of the magnetic needle, with unerring certainty. Second, it exhibits the altitude of the sun, and thus enables the mariner readily to compute latitude. It also exhibits the true time, and, by comparison, by the aid of the chronometer, shows the longitude. A chronometer is connected with the instrument. Without drawings it would be difficult to convey a good idea of its construction. It appears to be a practically useful invention, destined to render important assistance in navigation. It is based upon strictly scientific principles. Mr. Reeder has been engaged upon this invention for about twenty years, and has at last conquered every obstacle.

The Scientific American.

A new volume of this useful and admirably conducted weekly will commence on the 13th prox., and we commend it to the attention of every mechanic, inventor, engineer, farmer, man of science, and to every profession. Its illustrations of valuable inventions and descriptions of patented discoveries cover the entire field of ingenuity, both at home and abroad. Its editorials are the result of extended experience, and embody the most practical suggestions in the simplest manner. Philadelphia, which is the great manufacturing center of the country, should take at least ten thousand copies of this important work.

[Our friends, Messrs. Wallace & Fletcher of the Philadelphia *Sun*, will accept our thanks for the above friendly shake of the hand. We are indebted to many editors throughout the country for their kind notices of the Scientific American.

Ice by Machinery.

The Cleveland, Ohio, *Herald* states that there is a machine at the Cuyahoga Works, in that city, which makes a tun of ice per day. The ice is made in cakes of 6 by 12 inches thick, weighing 32 lbs. each. It is also stated that the expense for manufacturing only amounts to $5 per tun.

Franklin Institute Exhibition.

This Institute will hold its next Annual Exhibition in Janes' Building, Chestnut st. Philadelphia, during the month of November.

A brilliant meteor recently passed over Webster County, Iowa, illuminating the whole heavens for a few seconds. The source of these meteors is yet a mystery.

Revenue of British Railroads.

The total income of railroads in Great Britain for the first six months of the present year amounted to 49,940,490.

SPLENDID PRIZES.—PAID IN CASH.

The Proprietors of the Scientific American will pay, in *Cash*, the following splendid Prizes for the largest Lists of Subscribers sent in between the present time and the first of January, 1857, to wit

For the largest List,	$200
For the 2nd largest List,	175
For the 3rd largest List,	150
For the 4th largest List,	125
For the 5th largest List,	100
For the 6th largest List,	75
For the 7th largest List,	50
For the 8th largest List,	40
For the 9th largest List,	30
For the 10th largest List,	25
For the 11th largest List,	20
For the 12th largest List,	10

Names can be sent in at different times and from different Post Offices. The cash will be paid to the order of the successful competitor, immediately after the 1st of January, 1857.

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Scientific American.

NEW-YORK, SEPTEMBER 13, 1856.

Our New Volume.

Eleven years have now passed away since the SCIENTIFIC AMERICAN commenced its existance, and from a very humble beginning it has grown up to be an institution in our country. It occupies a place and a position among our Press peculiar to itself. It is the Advocate of Industry, the Repertory of American Inventions, and the herald of new and useful information relating to Science and the Arts. Many changes for the better have taken place since it commenced its career. Previous to that period our inventors, mechanics, artisans and manufacturer possessed no "watchman on the tower" to which they could refer for that peculiar information so necessary to their interests and welfare. Many periodicals, both before and since its origin, have attempted to occupy the same field, but they did not serve the public in the same capacity. A vast range of correct information relating to science and all the arts, and extensive means to obtain the latest and most reliable information on nearly all subjects are required to conduct such a periodical; without these it would neither be profitable nor useful to the public.

Invention, Science, and Art have progressed at a most wonderful rate during the past eleven years, and it affords us much pleasure to witness the influence our journal has exercised in stimulating inventive genius, in correcting errors in science, and in disseminating useful information.

The past year, especially, has been extraordinarily prolific in useful inventions, and judging from the past, we expect that the next will exhibit a still greater increase.

It has been our object—and we have always accomplished it—to make each succeeding volume superior to its predecessor; our readers, therefore, may expect that the present one will be the best ever published.

We take this opportunity to return thanks to our subscribers for their patronage, and the many expressions of kindness received at their hands. These stimulate and encourage us to renewed efforts in the cause of science and the dissemination of knowledge.

Our Prizes.

We invite the attention of our readers to the list of Prizes which will be found on another page of this paper. From many sections of the country we have received the most gratifying evidence of the interest which they excite. Clubs are forming and a generous rivalry for the prizes offered, is springing up.

It should be understood and remembered that we employ no traveling agents to collect subscriptions for us, but in lieu thereof, we offer handsome rewards in cash to all who will volunteer to get up clubs. This system we find to give much better satisfaction than the agency plan. The latter mode is subject to malpractice, and often occasions great confusion. But where individuals, known and residing in a community, take the matter in hand, confidence is at once secured, and the success of the canvasser rendered almost certain.

The sum of one thousand dollars is offered by us this year, for distribution among those who choose to take part in the formation of clubs. Read our advertisements,—ponder them well and then *act*.

To Our Correspondents.

Our thanks are due to our correspondents, who, from every quarter of the country, have from time to time furnished us with news of the progress of events in their localities, and with much valuable information relating to almost every subject in science, art, mechanics, practical chemistry, and agriculture. Our correspondents, generally, are men of sound sense, who endeavor to write clearly, who understand what they write about, and who are intelligent in all that relates to the really useful. They belong to every walk of life—professors in colleges, mechanics, civil and mechanical engineers, chemists, teachers, farmers, manufacturers, and merchants.

Scientific Ladies.—Experiments with Condensed Gases.

Some have not only entertained, but expressed the mean idea, that women do not possess the strength of mind necessary for scientific investigation. Owing to the nature of woman's duties, few of them have had the leisure or the opportunities to pursue science experimentally, but those of them who have had the taste and the opportunity to do so, have shown as much power and ability to investigate and observe correctly as men. We have Miss Mitchell, who has been awarded the King of Denmark's prize medal for her discoveries in astronomy; and there is Mrs. Somerville, of London, whose work on physical geography is one of the finest contributions to physical science ever published. So highly gifted is this lady, and so profoundly versed in the sciences, that the late Prof. Caldwell, of Louisville, who had an opportunity of conversing with her, and also seeing her perform some experiments, declared "she was deeply acquainted with almost every branch of physical science." Other cases might be mentioned, but these are sufficient for our purpose. Our constant readers will remember that several articles from different persons appeared in the last volume of the SCIENTIFIC AMERICAN, relating to solar heat at the surface of the earth. The question was introduced by Wm. Partridge, of Binghamton, who took the position, that density of the atmosphere, and not the angularity of the sun's rays, was the principal reason why it was warmer in valleys than on the tops of mountains. His views were opposed by other correspondents, but none of them supported their opinions with practical experiments to decide the question; this we are happy to say has been done by a lady. A paper was read before the late meeting of the Scientific Association, by Prof. Henry for Mrs. Eunice Foot, detailing her experiments to determine the effects of the sun's rays on different gases. These were made with an air pump and two glass receivers of the same size—four inches in diameter, and thirty in length. The air was exhausted from one and condensed in the other, and they were both placed in the sun light, side by side, with a thermometer in each. In a short period of time, the temperature in the receiver containing the condensed air, rose thirty degrees higher than the other; thus proving conclusively that the greater density of air on low levels is at least one cause of greater heat in valleys than on mountains. Experiments were also tried with moist air, and its temperature was elevated above dry air. Hydrogen gas was placed in one receiver and oxygen in the other, when the temperature of the former rose to 104°, but the latter to 106° Fah.; while, in carbonic acid—a more dense gas than either—it rose to 126°. It is believed and taught by geologists that during the period preceding the carboniferous era,—when the coal bed materials were forming—that the atmosphere of the earth contained immense quantities of carbonic acid, and that there was a very elevated temperature of atmosphere in existence, in comparison with that of the present day. Those who believe that this earth was once a fiery ball, attribute this ancient great atmospheric heat to the elevated temperature of the earth; but Mrs. Foot's experiments attribute it to a more rational cause, and leave the Plutonists but a small foundation to stand upon for their theory.

The columns of the SCIENTIFIC AMERICAN have been oftentimes graced with articles on scientific subjects, by ladies, which would do honor to men of the highest scientific reputation; and the experiments of Mrs. Foot afford abundant evidence of the ability of woman to investigate any subject with originality and precision.

Expenses of Railroads.

From the report just published of the Superintendent, D. C. McCallum, Esq., of the New York and Erie Railroad, for the month of July last, we gather some interesting facts regarding the working expenses of that road. The cost per mile for engineers and firemen is 5·22 cts.; for waste, oil, and tallow per mile, 1·50 cts.; for repairs of engines per mile, 8·66 cts.; for fuel per mile, 13·38 cts. Total cost per mile, 28·76 cts. The greatest item of expense is fuel, one cord being required for every 27·67 miles, the cost of which is $3·60 cts. Our railroads will soon be compelled to employ coal as fuel. No less than 10,032 cords were consumed on this railroad in July in running 287,587 miles. The number of cords of wood consumed per annum, at this rate, amounts to 120,384, or a pile 182 miles long, 4 feet high, and 4 broad. Our forests must soon go down before such fiery dragons as our railroads, which, with but few exceptions, use wood for fuel exclusively.

The cost per mile for fuel for each tun drawn amounts only to 88-100 cts., but we find that more dead weight is carried than useful load; 14,277,440 tuns of useful load were carried per mile, and 15,007,339 tuns of dead load. The weight of the engines, cars, &c., being classed as dead weight, paying nothing. A great saving would be effected if some of this dead load could be dispensed with.

The expense for repairing engines is also very great, averaging $8·66 per 100 miles; and allowing an engine to run 100 miles per day for 300 days during the year, the cost amounts to $2,598. The price of an engine being about $10,000, it destroys itself, at this rate, in about four years. We are of opinion that a perfectly constructed railroad—one avoiding rapid curves and steep inclines, and having a solid well-laid track—could be worked for at least one half the expense incurred on our best railroads.

At present the stocks of the majority of our railroads are very low; few of them are in a paying condition, and unless they can reduce their working expenses we do not see how they can retrieve themselves, and become profitable and paying concerns.

Recent American Patents.

Grain and Grass Harvester.—By Oren Stoddard, of Busti, N. Y.—In the ordinary harvesters the cutters all act simultaneously upon the grass, and the resistance, as thus combined, is confined to one point in the stroke. The sickle bar has no work to do except at the moment of cutting, and then the resistance is sudden and great. The motion of the machine is therefore irregular or jerking, which is bad in its effects upon the animals, etc. The present improvement consists in placing the cutters all at different angles to each other, so that the operation of cutting, instead of being confined to a single part of the stroke of the sickle bar, will be continuously going on, throughout the whole stroke. This equalizes the movement of the machine very much.

Harvester.—By C. Wheeler, Jr., of Poplar Ridge, N. Y.—Consists in a peculiar method of fastening the fingers to the finger bar, so that only one bolt is required for each. Great strength is also imparted to the fingers with a small weight of metal, and the fingers may be readily removed, if broken and replaced by new ones, the perfect part being retained. The nut of the holding bolt is so arranged that its nut does not obstruct the free passage of the cut grass or grain over the finger bar.

Harvester Rake.—By M. G. Hubbard, of Penn Yan, N. Y.—Consists in having the bar to which the rake is secured, provided with a joint and attached to an upright. The inner end of the aforesaid bar is connected with a pulley near its periphery, and the parts are so arranged that, as the pulley is rotated, the rake will sweep over the platform and rake the grain therefrom, and then rise and pass to the front end of the platform, descend, and again sweep over the platform.

Candle Mold.—By John Robingson, of New Brighton, Pa.—Consists in attaching a series of molds to endless chains which have an intermittent motion. Said molds, when filled pass through a water reservoir, which cools the tallow, and also pass and rest for a suitable time, over jaws, by which the wicks are drawn through the molds, the molds opened, and the candles withdrawn from them and deposited in a proper receptacle. The ingenuity displayed in this improvement, entitles the inventor to an honorable position in the ranks of genius.

Harvester.—By Homer Adkins, of Plymouth, Ill.—Consists, first, in operating the sickle by means of a notched or scolloped rim attached to the driving wheel, and a lever provided with rollers. Second, supporting the machine by three wheels, one of which is a swivel wheel attached to a frame, and so connected with the main frame as to swivel or turn it, as described. Third, in a rake operated by means of a crank and guide blocks.

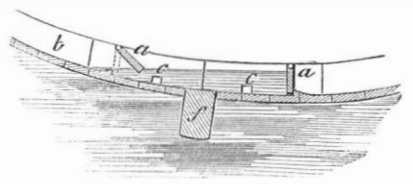
Pen and Pencil Case.—By John H. Knapp, of New York City.—Consists in having the pen slide fitted over a tube which encloses the pencil slide, the parts being peculiarly arranged so that the case may be made extremely short, and still rendered capable of being conveniently extended by means of the usual slide.

Buckle.—By Edward Parker, of Plymouth, Conn.—Consists in striking or swaging the bow and loop in one piece, from a metal plate, and securing the tongue therein by bending the center cross piece, which divides the bow and loop around the shank of the tongue.

Improvement in Stop-Waters for Vessels.—By Stephen Saunders, of South Kingston, R. I.—Stationary stop-waters have been placed in the spaces between the timbers of the hulls of vessels, of such a shape as to leave a narrow space between their lower edges and the inner surface of the planks, for the purpose of preventing the water that enters said space from rushing so rapidly downwards when the vessel is careened, as to produce what is technically called "blowing," or the forcing of a portion of the water out through the cracks of the flooring planks.

There is, however, a disadvantage attending the use of stationary stop-waters, viz., when a vessel has been for some time running on a wind, or in a careened position, the water will all accumulate below the stop-waters on the lowest side of the vessel; and when it becomes necessary to put the vessel before the wind to pump out, it will require a long time for the water to pass through the narrow openings.

The present improvement consists in rendering the stop waters vibratory, as shown in the accompanying diagram, where *a a* are the



swinging stop-waters, pivoted at their upper edges, and arranged respectively to swing in towards the center of the vessel, *b*, space between the sides and planking; *c c* limbers; *f* keel.

The advantage of the vibrating stop-waters, *a a*, are as follows: When a vessel is running on a wind, all the water which the vessel makes above the stop-waters, which are on the lowest side of the vessel, will be arrested by said stop-waters; and when it becomes necessary to pump out the vessel, and she is brought up before the wind for that purpose, the said stop waters on the side of the vessel that was depressed will swing inwards, and allow the water outside of them to readily flow inwards to the pump well.

Another advantage is that when a vessel is rolling whilst running before the wind, the water will be prevented from flowing outwards from the space above the keel. The stop-waters are suspended on pivots at their upper angles and they are so proportioned that when in a vertical position their lower edges will be in contact with the bottom planking of the vessel. The usual lumbers or apertures, *c c*, must be made in the lower sides of the timbers, to allow the water to find its way from the ends of the vessel to the pump wells.

There are other advantages connected with the use of this improvement which will readily suggest themselves to those acquainted with marine affairs. Patented July 10th, 1856. Address the inventor as above for further information, or apply to T. L. Randlett, No. 157 South st., New York City.

Rotary Engine.—By P. D. M. Carmichael, of Leroy, N. Y.—This invention consists in a rotary engine that is applicable either as a motor, to be operated by steam or other fluid, or as a pump for raising or forcing water or other fluids. The engine is composed of a piston with an eccentric rim, whose exterior fits, at one point, to the outer wall of the

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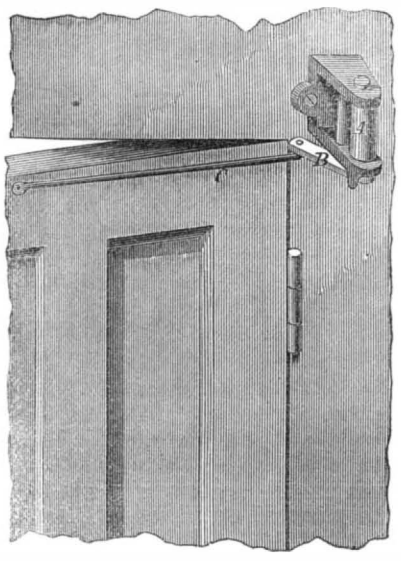
cylinder, and its interior at a diametrically opposite point, to a circular center block, said rim working within a slotted rocker in an oscillating abutment.

Rotary Engine.—By John Robingson, of New Brighton, Pa.—This invention relates to rotary engines having a piston which is fixed relatively to the rotating shaft, or only to a slight extent yielding, and sliding abutments. The improvement consists in a certain novel arrangement of induction and eduction passages on opposite sides of the piston.

Calendar Clock.—By Edwin Allen, of Glastenbury, Conn.—This invention consists in certain novel means of effecting the changes in the movements that are rendered necessary by the different lengths of the months, which render the construction simpler, surer, and cheaper.

Paper Feeder for Printing Presses.—By David Babson, Groton, Ct.—Consists, first, in a peculiar means of picking up the sheets of paper, one at a time, and carrying them to endless bands, which convey them to the printing cylinders. Second, in a device for elevating or feeding the pile of sheets upwards, as fast as they are taken off by the mechanism previously mentioned.

Improved Door Spring.—By G. L. Bailey, of Portland, Me.—In this improvement the power of the spring, A, is applied to the door through the medium of the levers, B C, which have the toggle joint action. The tendency of the spring is to throw the short lever, B, outward, and this draws the inner end of the long lever, C, also outward. The outer extremity of long lever, C, is then pressed inward against the door, to which it is fastened. As the door closes, the ends of the two levers, where they join, straighten, and thus increase the pressure on the door. In this manner the greatest pressure of the spring is always applied when the door offers the greatest resistance, to wit., when standing slightly open.



Another advantage of this arrangement is that the travel of the spring is essentially lessened, in consequence of the crank arm being made to turn inward when the door is opened. The necessity of its being strained to an undue degree when the door is opened wide is thereby almost entirely obviated. The durability of the spring is thus increased very much. The whole travel of the spring is about one-eighth of a turn.

Further information will be given by the patentee as above, or by J. A. Knight & Co., 334 Broadway, this city. Patented April 15th 1856.

A Guano Island Non Est Inventus.

Some time ago it was announced in some of our papers that a guano island, not laid down in any map, had been discovered by one of our merchant ships in the Pacific ocean, and considerable excitement was created respecting it, as it was stated that cheap guano would soon be obtained therefrom in unlimited quantities. Such islands have turned out a delusion, so far as guano is concerned.

The U. S. sloop-of-war *Independence* in its recent cruise in the Pacific, was ordered to take a peep at the Islands, and report to the Government. It did so; and Captain Mervine in his report says :—

"Intense interest appeared to pervade all minds, fore and aft, as the ship neared the promised El Dorado of the mercantile and agricultural interests of our country. The delusion, however, was but transitory; a nearer view revealed to our astonished vision the whole islands covered with a deep green mantle of luxuriant vegetation, indicative certainly of the strength of the soil and heavy rains common in this locality, as also of the worthlessness of the deposit thereon as an article of commerce. The value of guano is, I believe, determined by the amount of ammonia which it contains, which is generated by successive deposits of bird lime in rainless districts.—That there is a large deposit of bird lime on the island in a state of decomposition, the vegetation and great number of birds hovering over it abundantly attest."

Manufacture of Malleable Iron without Fuel.

At the meeting of the British Association for the Advancement of Science, held in Cheltenham, Eng., last month, H. Bessemer, of London, read a paper on a new method of making malleable iron from pig iron, which deserves the attention of our iron manufacturers, as the process is very original, is stated to be perfectly successful, and destined to revolutionize the processes of manufacturing malleable iron and steel.

The following is the substance of his paper, which we have condensed for our columns :—

For the last two years his attention had been almost exclusively devoted to the manufacture of malleable iron and steel, with but little progress, until within the last nine months. The idea occurred to him that if molten pig iron at a glowing heat was run into a chamber and a blast driven through it, that the five per cent. of carbon in it would unite with the oxygen of the blast, producing intense combustion, because carbon cannot exist at a white heat in contact with oxygen. He therefore put up an apparatus capable of converting about 7 cwt. of crude pig into malleable iron, and so successful was the result that crude pig was rendered into malleable iron in half an hour.

He then put up a cylindrical vessel 3 feet in diameter and 5 feet high, like an ordinary cupola furnace, the interior of which he lined with fire brick. At about two inches from the bottom are inserted five tuyre pipes, having nozzles of fire clay. At one side of this vessel, half way up, is a tap hole for running in the crude molten pig iron from a common blast furnace, and on the opposite side is another tap hole, to run out the metal when the process is completed. A blast of air of a pressure of 8 pounds to the square inch is let into this cylinder a few minutes before the crude iron is allowed to flow into it from the blast furnace. The molten crude iron is then let in by its tap, and it soon begins to boil and toss about with great violence. Flames and bright sparks then begin to issue from the vessel's top; the oxygen of the air from the blower combines with the carbon in the metal, evolving a most intense heat producing carbonic acid gas, which escapes; the metal is deprived of its carbon without roasting, by fuel, as by the common mode, and thus it is rendered into malleable iron.

By this simple process the heat generated is stated to be so intense that all slag is thrown out in large foaming massses, and all the sulphur is driven off, together with deriorating earthy bases, so that the metal is completely refined—more pure than any puddled iron. It is also stated that one workman by this process can convert 5 tuns of crude pig into malleable iron in about 30 minutes. Its advantages are painted in such dazzling colors that we are afraid to rely upon them implicitly. If they are such as Mr. Bessemer has described, a new era in the iron manufacture has dawned upon the world, and malleable iron will soon be reduced to a price but little above common pig.

We hail every improvement in the manufacture of iron, either to cheapen its price or improve its quality, as of vast consequence to mankind, because it is the principal material employed in the mechanic arts; it is the great material agent of modern progress in physical science. Without it we would neither have steam engines, steamships, railroads, cotton or woolen manufactories; we would be as deficient in machinery as our forefathers who ived in the age of bronze.

An immense amount of fuel is employed in the common process of rendering pig iron malleable. It is roasted in a furnace by fire heat for a very long period until its carbon is made to unite with the oxygen, to which it is exposed to form carbonic acid, which is driven off. The new process accomplishes the same result without the use of any fuel—the carbon in the metal being made the agent to decarbonize itself.

The heat produced by this process is also stated to be so great that scrap iron placed in a small chamber near its top is smelted. By this process steel of different qualities, it is also stated, can be produced by tapping the metal at different stages of the process after it boils in the cylinder.

The Merrimac's Boilers.

This new steam frigate has been lying in our harbor for some time, and it is stated that her boilers are undergoing extensive alterations by the removal of a vast number of tubes —160 in each—and the plugging up of their holes. The object of these changes is to improve their draft, which was defective. Will the boilers of the other five new steam frigates have to be altered for the same reason? The cost of such great alterations cannot be small. If the boilers of the *Niagara* are constructed in the same manner exactly, they should be altered before they are finally fitted up. It is our opinion that many of our boiler makers and engineers commit great mistakes in packing too many tubes in their boilers in order to obtain a greater amount of heating surface, at the expense of injuring their draft.

There are marine and locomotive boilers now in use that would give better results if one fourth, at least, of their tubes were taken out. In many boilers too little combustion space is allowed, and this defect combined with too many tubes (which add to the cost of a boiler) make them slow generators of steam, and also wasters of fuel.

Fair of the American Institute.

Extensive preparations are now making in the Crystal Palace for holding the next Fair of the Institute, which is to open on the 22d of this month, and continue until the 25th of October. Its last Fair was the best ever held, and it is believed that this one will far surpass it. Its present officers are men of energy and spirit, and they state they will do their best to make this Fair an unrivalled exhibition of American Industry.

We hope that all exhibitors will have their machines and articles perfectly arranged—in full working condition and fully displayed—on the very first day of the Fair, so that it will open without confusion, and in perfect order. It has always been a just cause of complaint against the arrangement of fairs of the Institute, that they have opened prematurely in disorder.

We also urge upon the Managers to require all exhibitors to place proper labels on their articles, especially machines. These should give the names of the inventors or makers, and contain brief descriptions of their character and operations.

Impartial reports of the machinery and manufacturies exhibited will be given in our columns.

Large and Small Steamers and Sea Sickness.

The editor of the *Nautical Magazine* states that the size of vessels do not influence sea sickness, but their shape. He states that the *Great Eastern* will roll beyond measure on account of her form, and that "sea travelers will bear him out in the assertion, that they are not the less subjected to sea sickness in large steamers than in small ones—as a general rule." This may be so, but having made some sea voyages in steamers and sailing vessels, it has not been our experience.

The Quickest Atlantic Voyage.

The steamer *Persia* made her last trip from this port to Liverpool in 9 days, 2 hours, and 40 minutes steaming. This is the shortest passage ever made between the two ports.—The *Adriatic*, now getting in her machinery at the Novelty Works, it is expected, will be ready to make her trial trip in October. It is anticipated that she will beat the *Persia's* best voyages.

Recent Foreign Inventions.

Lustering Colored Fabrics.—Edward Schisakar, of Halifax, Eng., patentee.—This inventor has discovered that wool, hair, silk, cotton, and various textile fabrics, when impregnated with the salts or oxyds of copper, or those of lead, can be acted upon by reducing or deoxydizing agents, such as the proto-salts and oxyds of tin and iron, arsenic acid, arsenites, and sulpharsenites and sugar, so as to impart to them a bright lustrous appearance. The goods are therefore first treated with solutions of the salts or oxyds of the metals first named above, then reduced by a solution of sugar, which is preferred by the patentee. The goods thus treated are stated to have a bright shining appearance. This process is most successful with what are called *steam colors*, in calico printing—that is, submitting the goods in the finishing operation to the action of steam in a close chamber.

Mineral Manure.—A. McDougal, of Manchester, Eng., patentee.—This invention consists in submitting *coprolites* to the action of sulphurous acid and steam, by which, the patentee states, he obtains manures, gelatinous matter and fat—valuable products truly. Coprolites are the remains of extinct animals, and their excrements found in different parts of England and other places, enclosed in the limestone formation. Liebig states, in his letters on chemistry, that "in the remains of an extinct animal world, England is to find the means of increasing her wealth in agricultural produce, as she has found the great support of her manufacturing industry, in a fossil fuel—the remains of a vegetable world."

We are not aware of any discoveries of coprolites made in our own country, no doubt they exist and will yet be exhumed, and perhaps by the invention of Mr. McDougal, they may be made available for our farmers, and supersede the necessity of expending so much annually for guano.

Arranging Propellers in Vessels.—George Napier, of London, and John Miller, of Glasgow—both engineers—we understand, have secured a patent for the following peculiar arrangement of propellers for steam ships.

The propeller is placed on a short shaft mounted in a sliding frame placed in the deadwood, in which it has bearings down to the keel. A portion of the dead-wood and rudder post support the sliding frame in rear and front, and the sliding frame can be moved vertically up and down. A vertical driving shaft is fitted to the frame, and has a bevel wheel on it, which gears with another on the shaft proceeding from the engine; also by another with the short shaft of the propeller. This frame can be so moved that the propeller can be made to operate at different depths.

It is our opinion that no advantage can be obtained by such an arrangement. Water being an almost incompressible fluid, its density is about the same at all depths; hence the resistance to the propeller is about the same at all depths. The present method of arranging propellers is so simple and permanent that a cumbrous frame, with extra shafts and gearing, like those of the above patentees, appears to be the reverse of an improvement.

Rotary Engine.—Charles C. Joubert, and L. A. Bordier, of Paris, France, have lately patented, in England, a rotary engine, something on the principle of the wing pump. A thread is formed on the extension end of a shaft, upon which a piston paddle is keyed. This works in a cylinder having two openings —one for admitting and the other emitting or exhausting the steam; there is also a fixed partition in the inside of this cylinder. When steam is admitted into the cylinder it presses against the paddles on the shaft, and gives it a rotary motion. This is one of the oldest and most simple of rotary steam engines; it is well known in this country.

The bark of the Mammoth Tree, from California, which has been exhibited in this city in the Crystal Palace, is now on exhibition in London.

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L. B. M., of Ga.—Your brick shield and wooden curb for sinking in your well, as the digging proceeds, will answer very well—if the sand is hard, moist, and compact; but if it is quicksand, it will not answer—as the sand will fill in under it. Use hydranlic cement for the wall of the well, both inside and out, and also for joints, as far as practicable. You can make a very good hydraulic cement of well-burned lime and brick-dust—use one part of the latter to four parts of lime.

A. N., of Conn.—If you put less zinc into the muriatic acid, it will not crystallize so readily. All chloride of zinc solutions, if very strong, will deposite the chloride of zinc in crystals. To obtain pure nitrate of silver from an amalgam of silver and copper, dissolve the metal in nitric acid, and then add some pieces of copper; the acid will unite with the copper and leave the silver, which will sink to the bottom in the form of a gray powder. Throw away the green, acid liquor, wash the gray powder and redissolve it in nitric acid.

McA. & Bro., of Phila.—We have received the gyrascope. An article on the subject will soon appear.

P. J. H., of Ind.—We advise you to get Campbell Morfitt's works on Soap and Candle Making, published by Parry & McMillan, Phila.

C. H. A., of Ohio.—It is very difficult to keep out water from the outside of a cistern by plastering inside, but it is the only course you can adopt. Use good hydraulic cement.

W. McK., N. Y.—An upright saw would be the best for your purpose, as you would require a 40-inch circular saw to do some of your work. If you had plenty of power we would advise you to get a circular saw.

G. W. A., of Mich.—Fine mastic varnish is used for wall maps. Any pure white resin dissolved in alcohol makes a good varnish for maps, drawings, &c.

M. S. B., of La.—A syphon cannot elevate water from a lower depth than thirty-three feet. You must employ a pump in the mine of 500 feet described by you.

B. & O. of N. Y.—The Woodworth Patent has not been extended. It is a most sad and hopeless case to its advocates. They might just as well abandon it first as last. There are good men and true in Congress who will block every attempt at smuggling it through without fair and open debate upon its merits

J. B. of La.—The method of making ink described by you is well-known and used. It was described in our columns some years since.

S. W. Wilson, Vandalia, Mich.—Wishes to procure the best spoke tenoning lathe in use. Will some of our readers please to inform him.

Z. L. of Ind.—In all likelihood, the bore of your barometer-tube is rough, which thus causes the mercury to adhere to its sides, and prevents its rising and falling by an increase of friction. Suspend it in such a manner that it can swing, and the evil may be corrected. It is certainly a very defective instrument.

W. S. H. of Ohio.—The philosophy of separating butter from milk, by churning, hitherto entertained by chemists is, that agitation changes the arrangement or order of the particles of the milk, and the constituents separate from one another. No decomposition, it is stated, takes place.

A. P. M. of N. Y,—There is no work on telegraphing, which contains the precise information required by you.

J. P. K., of Ala.—Timber walls made double and packed with straw, make a good ice-house. You may use stone, brick or wood for the wall, taking care to have the walls double, with a good non-conductor between them—such as sawdust, fine charcoal, or straw.

G. W. McC. of Ill.—Yours will meet with attention in due season.

J. R. of Miss.—There is no recent work published on clock and watch making. Reed's work is the only one we are acquainted with, which is considered reliable.

R. K. T. of N. J.—We do not understand your problem as you have stated it. You should describe your method of dividing the circle.

Money received at the SCIENTIFIC AMERICAN Office, on account of Patent Office business for two weeks ending Saturday, Sept. 6, 1856:—

T. W. B., of N. Y., $30; J. H. F., of Vt., $27; T. S. B., of Iowa, $22; D. H., of Pa., $25; H. C., of Pa., $30; D. W. G., of N. Y., $50; T. D., of Va., $30; S. Y., of N. Y., $25; N. C. A., of Conn., $60; J. F. S., of N. Y., $25; S. M. Co., of Mass., $250; L. R., of Mass., $25; J. R., of Pa., $25; E. A. & C. K., of Vt., $55; J. P., of Pa., $30; S. & S., of N. J., $30; J. L. M., of Pa., $30; B. G. A., of O., $30; J. P., of N. Y., $25; L. A. O., of Pa., $25; B. G. N. of Wis., $25; B. & T., of Ga., $25; H. C., of Mass., $27; T. F. St. J., of N. Y., $10; C. H. H., of N. H., $30; R. P. B., of O., $30; S. I., of N. Y., $27; J. P., of Conn., $20; G. & B., of Ill., $17; J. S., of L. I., $30; T. J. T., of N. Y., $55; C. M., of N. Y., $15; T. V., of Cal., $30; C. W. G., of Conn., $30; D. C., Jr., of Ala., $30; J. C. G., of O., $55; G. H. T., of Mass., $40; J. H. H., of N. Y., $30; J. M. R., of N. J., $75; J. R. G., of O., $40; W. N. M., of R. I., $25; D. M. & Co., of Pa., $25; A. M. J., of Va., $25; W. H., of Wis., $30; C. S., of Ky., $30; A. O., of N. Y., $25; J. H., of N. Y., $30; M. & C. P., of Md., $30; S. M. & Co., of O., $55; W. T., of O., $55; D. & S., of La., $30; C. F. S., of Mass., $12; J. B., of Ill., $25; S. Z. X., of Tex., $25; H. & B., of N. Y., $141; J. J. C., of Mo., $30; G. D., of N. Y., $27; G. H. S., of Mass., $30; J. B., of Mich., $30; S. S., of Ind., $20; A. W. & Son, of N. Y., $30; A. McL. & Co., of N. Y., $30; M. & F., of L. I., $55; T. P., of France, $35; E. P. & J. A. C., of N. Y., $30; J. P., of Pa., $25; L. W. R., of Mass., $27.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during two weeks ending Saturday, Sept. 6th:—

T. S. B., of Iowa, J. H. F., of Vt.; D. G., of Ill.; J. A. H., of Ind.; S. Y., of N. Y.; D. H., of Pa.; L. A. O., of Pa.; R. P. B., of O.; B. & T., of Ga.; J. O., of N. Y.; L. R., of Mass.; N. & B., of N. Y.; J. R., of Pa.; J. F. S., of N. Y.; J. G. M., of London, 3 cases; B. G. N., of Wis.; J. P., of N. Y.; E. A. D., of Ind.; D. W. G., of N. Y.; D. C., Jr., of La.; G. & B., of Ill.; S. I., of L. I.; H. C., of Mass.; A. O., of N. Y.; D. M. & Co., of Pa.; A. M. J., of Va.; J. M. R., of N. J., 3 cases; T. V., of Cala.; W. N. M. of R. I. C. T. S., of Mass. T. F. DeF., of Conn.; G. D., of N. Y.; T. B., of N. Y.; E. A. & C. K., of Vt.; W. B. B., of Conn.; J. B., of Mich.; S. Z. H., of Tex.; T. P., of France.

Important Items.

MODELS—Inventors, in constructing their models, should bear in mind that they must not exceed a foot in measurement in either direction. They will also remember that the law requires that all models shall be neatly and substantially made of durable material. If made of soft wood they should be painted or stained. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and prevent the liability of their being mislaid.

PATENT LAWS AND GUIDE TO INVENTORS.—This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office. Price 12 1-2 cents per copy. A Circular, giving instructions to inventors in regard to the size and proper construction of their models with other useful information to an applicant for a patent, is furnished gratis a this office upon application by mail.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

FOREIGN SUNSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the next volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

Terms of Advertising.

Twenty-five cents a line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

☞ All advertisements must be paid for before inserting.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had TEN years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.
American and Foreign Patent Attornies, Principal Office 128 Fulton street, New York.

A NEW ROPE MACHINE—Patented July 15th, 1856, far excelling all others heretofore known, it is on a new but now well tested principle, that combines simplicity with utility, beauty of workmanship, and great speed, with small requirement of power, in the manufacture of cordage. The proprietor is desirous of a purchaser of the right for one or more States; or a person to dispose of them who would advance from $1000 to $3000 on the right. For certificates and a knowledge of where it may be seen in operation, inquire of Messrs. TOUSLEY & REED, Engine Manufacturers, 95 Maidenlane, N. Y. 1

BLOWING MACHINERY FOR SALE—A pair of double acting Blowing Cylinders, 42x30 inches, in perfect order. Also a horizontal Steam Engine, 16x36 inches, at the Atlas Foundry, foot of Wayne street, Jersey City. 1 2*

AGENTS WANTED—WESTCOTT, COGSWELL & CO., manufacturers of Westcott's Railway Door Springs, are now prepared to offer the most perfect article yet invented. Agents wanted in every county of unsold territory in the United States and Canada. For agencies or rights, address E. H. BABCOCK, General Agent, No. 3 Cortland st., N. Y. 1 2*

FOR SALE, ON LIBERAL TERMS.—Rights for the whole U. S., in DENISON'S CARPET FASTENER, Patented last month. The American Mechanic, containing a description of this long-sought substitute for carpet tacks, will be sent to the applicant, by mail, on receipt of one postage stamp. Address, A. K. AMSDEN, Patent Broker, Rochester, N. Y. 1*

IRON PLANING MACHINE, made by Naysmith, Manchester, England, will be sold very cheap. It will plane 7 ft. 8 in. long, 3 ft. 3 in. wide, 3 ft. 4 in. high, and has off set pieces to plane 5 ft. wide. Price, $350. R. HOE & CO., Nos. 29 and 31 Gold street. 1*

FOR SALE—TO COACH LACE WEAVERS AND TWISTERS.—A large Coach Lace Loom, made in London, with Shuttles, Treddles and Tackle all complete, one large Twisting Wheel 12 hooks, with gimp heads, all complete. Also, a quantity of Fringe Looms, suitable for a large factory, to be seen at 105 South Sixth street, Williamsburgh. P. BRAMOHSTE. 1*

DR. SMITH'S CRYSTAL GALVANIC BATTERY.—This Battery never requires cleaning, runs 60 hours without stopping—then, at an expense of one cent and one minute, runs sixty hours longer, and so on continually. Price, in conjunction with my Magnetic Machine, $12. Those who have the blue vitriol battery can have it replaced with the Crystal Battery for $3. SAMUEL B. SMITH, Electro-Magnetist, No. 77 Canal-st., N. Y. 1*

DR. SMITH'S ELECTRO-CHEMICAL BATH, for the extradition of mercury and other deleterious minerals from the body, now runs on the same principle. Price $65, with full instructions. SAMUEL B. SMITH, Electro-Magnetist, 77 Canal street, New-York. 1*

I AM an ingenious inventor and a practical machinist, poor but honest, and if any one will suggest to me a machine for invention, I will invent it for one-half the interest; I will give satisfactory references before I commence. EDWARD M. CAMPBELL, Boston, Mass 1*

NEW ROBINSON'S PATENT HEAD TURNING AND PLANING MACHINE, for Heads of all kinds and descriptions; it will make from 200 to 350 heads per hour, of the most perfect description. There will be one on exhibition at the Crystal Palace, N. Y., at the Fair of the American Institute, in October, where those wishing for Machines or State rights can see it in operation and judge of its merits for themselves. All communications in relation to machines and rights should be addressed to ROBINSON, SCRIBNER & CO., Keeseville, Essex Co., N. Y. 1 4*

A CARD.—I will apply my Rotary Pendulum Governor to any good Engine driving a Cotton factory, and having sufficient power, and engage to regulate it so as not to require a change of count in timing strokes, and if another cotton factory can be found to equal it, I will forfeit it to the person having it so applied. JOHN TREMPER, No. 1 South Sixth street, Philadelphia. 1*

THE PATENT DECISION—To the Editors of the SCIENTIFIC AMERICAN:—The statement in your paper of this morning in regard to the verdict of the jury in the case of George Page *vs.* Georgia, is a perverted one. It is true that the verdict was in favor of the defendant, but not upon the ground stated in the Elmira Advertiser, which you copied. On the first ballot of the jury there were 7 for the plaintiff and 5 for the defendant.—The jury then proceeded to take up each question separately: First, they passed upon the question of priority of invention, and decided in favor of plaintiff, George Page. The next question was, Did the defendant infringe the patent? Upon this question the jury stood 8 for plaintiff and 4 for defendant, and so stood until 5 o'clock in the morning, and ultimately brought in a verdict for defendant, upon the testimony of one of the witnesses for defendant, who swore that he had tended the mill from the time it started, and that it never had end-play. And as this formed the essence of the infringment, and it was not proven by the witnesses of complainant that the mill had been worked with end-play, though the fact is notorious that it had been so worked, the jury found for the defendant, though they unanimously decided that the priority of invention belonged to George Page, thereby sustaining the validity of his patent.
GEORGE PAGE & CO.,
Baltimore, August 2d. 50 4

A NEW AND SCIENTIFIC INVENTION—Dr Cheever's Galvano-Electric Regenerator. Patent issued Jan. 15th, 1856. A circular relating to the use of the instrument, embracing a general treatise of atony of the spermatic organs, the result of which tends to softening the medullary substance of which the brain is composed may be had gratis, and will be sent to any address by mail by their indicating a desire to receive it. All letters should be directed to DR. J. CHEEVER, No. 1 Tremont Temple, Boston 51 4*

ALEXANDER'S COMPOUND Parallel Sawing Machine, for making lath from the slab or board cross-cutting, ripping, and sawing miter, all combined in a cheap, simple and compact manner, is illustrated in No. 50, Scientific American. Sash factories, cabinet shops, carpenter shops, etc., should have these machines. Price $60. Country and State rights for sale. Address THOS. J. ALEXANDER, Westerville, Franklin Co, Ohio. 50 5*

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse, New York Belting and Packing Co., JOHN H. CHEEVER, Treasurer, No. 6 Dey street, N. Y. 48 10*

NO. 1.—$800,000 VALUABLE TO EVERYBODY. A few weeks ago CHARLES BRADFIELD, of Philadelphia, opened a new Agricultural Implement Store at Fifth and Chestnut streets. One spacious room he appropriated entirely to new inventions. See below.

NO. 2.—INVENTORS, PATENTEES, &c., were all cordially invited to place their models here, free of charge, and the Philadelphia papers say there is already six to eight hundred thousand dollars worth of patents in this room, and visitors from all parts of the world visit there to see them. 51 4*

1000 YOUNG MEN for big wages. Honest, easy, and sure. Send stamp to Box 533, Detroit, Mich. 51 1*

POLYTECHNIC COLLEGE of the State of Pennsylvania, West Penn Square, Philadelphia.—Organized on the plan of the Industrial Colleges of Continental Europe, and the only College in the Union in which gentlemen graduate in the industrial professions. Fourth year, commencing Monday, Sept. 15th, 1856.—Faculty: Mathematics and Engineering, Prof. S. H. Peabody; General and Applied Chemistry, Prof. A. L. Kennedy; Mechanics and Machinery, Prof. H. H. Boucher; Geology, Mineralogy, and Mining, Prof. A. W. King; Architectural and Topographical Drawing, Prof. J. Kennedy; Modern Languages, Profs. B. Steinthal and V. De Amarelli. For catalogues and further information Apply to A. L. KENNEDY,
51 2 Prest. of the Faculty.

1000 YOUNG MEN can make 500 per cent. or over at home or abroad. But small means required. Business new, easy, neat, respectable. For full particulars address (enclosing a stamp)
WILLIAM HART,
51 3* Mayville, Dodge Co., Wis.

R. B. FITTS & CO., Commission Agents for the Management an Sale of American and Foreign Patent Rights, Office, No. 23 Congress st., Boston, Mass. 51 4*

SWISS DRAWING INSTRUMENTS—A full stock of these celebrated instruments always on hand. Catalogues gratis. AMSLER & WIRZ,
51 4* 211 Chestnut st., Philadelphia.

GREAT WESTERN MACHINERY AND PATENT AGENCY.—E. E. ELLSWORTH having disposed of his interest in the firm, the business hereafter will be conducted under the firm and style of DAVID RICHARDS & CO. We are prepared to sell all kinds of valuable improvements and machinery throughout the United States. For further information address
DAVID RICHARD & CO.,
51 6* No. 64 Randolph st., Chicago, Ill.

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc.
CHARLES W. COPELAND,
27 eowtf Consulting Engineer, 64 Broadway.

CLOCKS for Churches, Court Houses, &c. Regulators and time pieces for jewelers, railroads, offices, &c. Also glass dials of any size for illuminating, and other kinds manufactured and warranted by the subscriber.—JOHN SHERRY, Oakland Works, Sag Harbor, N. Y.
37 12 eow

CLARK'S PATENT WATER REGULATOR—The only perfect security against steam boiler explosions, caused by want of water. Every steam boiler should have one. Regulators sold and applied and rights for most of the States and Territories, for sale by S. C. HILLS, 12 Platt st., N. Y. 1 2ow*

PORTABLE STEAM ENGINES.—S. C. HILLS No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 500 lbs., price $240; other sizes in proportion. 1 e3w

THE NINTH ANNUAL EXHIBITION OF THE Maryland Institute for the Promotion of the Mechanic Arts will be opened at the Institute's spacious hall, Baltimore, on Wednesday, Oct. 1st. and continue to Oct. 29th, 1856. Goods for exhibition and competition will be received at any time prior to Friday night, Sept. 26th, after which for exhibition only, except such as the Committee shall be satisfied were dispatched in time to have reached the Hall by that day, but failed to do so from unavoidable detention. The co-operation of the manufacturers, mechanics, artists, and the community generally is respectfully solicited. Circulars embodying the regulations and blank applications for space, with all other information, will be promptly furnished by application to John S. Selby, Actuary of the Institute.
JOSHUA VANSANT,
51 4 Chairman of the Exhibition Committee.

CIRCULAR SAWS—We respectfully call the attention of manufacturers of lumber to the great improvements recently introduced in the manufacture of our Circular Saws. Being sole proprietors of Southwell's patent for grinding saws, we are enabled to grind circular saws from six inches to six feet with the greatest accuracy and precision. The impossibility of grinding a saw without leaving it uneven in thickness has always been acknowledged by practical saw makers. This causes the saw to expand as soon as it becomes slightly heated in working. When this takes place the saw loses its stiffness, and will not cut in a direct line. We will warrant our saws to be free from these defects; they are made perfectly even in thickness, or gradually increase in thickness from the edge to the center, as may be desired. As there are no thick or thin places, the friction on the surface of the saw is uniform, consequently it will remain stiff and true, and will require less set and less power. Will saw smooth, save lumber, and will not be liable to become untrue. This is the oldest establishment now in existence for the manufacture of circular saws in the United States, having been established in the year 1830. Orders received at our Warehouse, No. 48 Congress st., Boston.
44 13 * WELCH & GRIFFITHS.

KNITTING MACHINES—Circular and straight knitting machines of all sizes and gauges on hand and made to order. WALTER AIKEN, Franklin, N. H.
46 13*

PAGE'S PATENT PERPETUAL LIME KILN, will burn 100 barrels of lime with three cords of wood every 24 hours; likewise my coal kiln will burn 150 bushel with 1 tuh bituminous coal in the same time; coal is not mixed with limestone. Rights for sale.
45 26 C. D. PAGE, Rochester, N. Y.

50 STEAM ENGINES—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM BURDON, 102 Front st., Brooklyn. 41 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 41 tf

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
LOGAN & LIDGERWOOD,
13 1y* 9 Gold st., N. Y.

PALMER & CO., Electrotypers, and Manufacturers of Electrotype Materials, 128 Fulton st., N. Y. Molding Presses, Batteries, Cases, Backing Pans, Shaving Machines, Metal Kettles, Planes, Blocks, Building Irons, etc., etc., on hand, or furnished at short notice, and at moderate charges. Adams' Improved batteries and black-lead machines also for sale. 23 tf

PAGE'S PATENT CIRCULAR SAW MILLS with Steam Engine and Boiler, on hand and for sale for $1500, at Schenck Machine Depot, 163 Greenwich st. New York. A. L. ACKERMAN. 49 10

CIRCULAR SAW MILLS—The subscriber has on hand, and is constantly manufacturing those celebrated mills with saws from 30 to 80 inches diameter, adapted to manufacturing most kinds of lumber, and warranted to give satisfaction. For prices, &c., address W. HERRICK, Northampton, Mass. 49 8*

BARREL MACHINERY—CROZIER'S PATENT is unrivalled in point of quality and quantity of work performed, and may be seen in constant operation at the Barrel Manufactory of the undersigned. For rights and machines address WELCH & CROZIER,
43 18* Oswego, N. Y.

TWO CAR BUILDERS—For Sale, one new Upright Boring Mill for boring car wheels. Maker's price $600, will be sold for $300 cash. Address GEO. S. LINCOLN & CO., Hartford, Ct. 43tf

FOR SALE—One second-hand 7 ft. power Planing Machine, made by the New Haven Manufacturing Co. Cost $500, will be sold for $300 cash. Has been used only about four months. Also an upright drill by the same makers. Cost $90, will be sold or $40 cash. Address GEORGE S. LINCOLN & CO.,
47 tf Hartford, Conn.

BOILER FLUES—All sizes and any length promptly furnished by JAMES O. MORSE & CO., No. 79 John st., N. Y. 51 3mos

WROUGHT-IRON PIPE—Plain, also galvanized inside and outside, sold at wholesale by JAMES O. MORSE & CO., No. 79 John st., N. Y. 51 3mos

FORBES & BOND, Artists, 89 Nassau st, N. Y., Mechanical and general Draughtsmen on wood, stone, &c.

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 1 tf

NORCROSS ROTARY PLANING MACHINE—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.
Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
Office for sale of rights at 27 State street, Boston, and Lowell, Mass. 1tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For circ'sgiving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 1tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 51tf

BOILER INCRUSTATIONS PREVENTER—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 41 tf

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Science and Art.

Experiments with the Chinese Sugar Cane.

Some of the seeds of the Chinese sugar millet having been obtained by Ex-Governor Hammond, of South Carolina, he has recently reported the results of his experiments, which have been published in the Charleston *Mercury*. He planted a pint of seed on half an acre of rather poor soil, on the 22nd of last March; the seeds were dropped 18 inches apart in 3 feet wide rows. When the plants came up they were frequently hoed, to keep down grass and weeds. On the 22nd of July some of the advanced heads had passed the milk stage, and he had a rude mill put up, consisting of two wooden rollers, to ascertain whether the millet would make syrup. About 1750 canes were cut, and 400 passed through the rollers twice, and the remainder four times; the yield was 194 quarts of juice, and ten selected canes put through the mill seven times, yielded three quarts. The juice was received in common wooden tubs, and tested with a thermometer, and a sacchrometer having a scale of 40 degrees. The temperature of the juice was 78° Fah., the strength 23·5°, and floated a fresh egg. It was boiled in a deep old-fashioned cow pot, for seven hours, and yielded 32 quarts of tolerable syrup. Next day he selected more of the canes in different stages of progress, and submitted them to the mill seven times, and from every 10 again obtained 3 quarts of juice. This was also boiled, and he obtained a rather better syrup. To every five gallons of the cold juice a teaspoonful of limewater was added. The canes were one inch thick at the butt, and seven feet long, after cutting off the head. The syrup was equal to the best New Orleans. Respecting this plant, Ex-Governor Hammond says:

"I did not attempt to make sugar, not having prepared for that. There can, however, be no doubt that sugar can be made from such syrup as this. And, as they make more syrup in the West Indies per acre than they do in Louisiana, only because the cane matures better, it is not unreasonable to infer that the millet, which matures here perfectly, and will even make two crops in one year, will yield more and better sugar than the Louisiana cane.

Beginning to cut the cane as soon as the head is fully developed, it may be cut for a month before it will all ripen—how long after that I do not know. A succession of crops might be easily arranged so as to insure cutting and boiling from the 1st of July—probably earlier—until frost. I have housed some stalks immediately from the field, to ascertain, hereafter, whether thus treated it will yield juice and make syrup next winter."

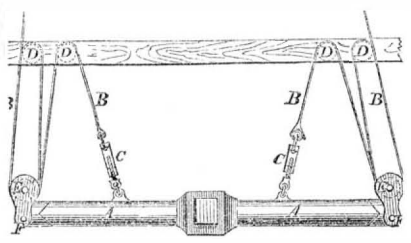
Sugar has now become a most important article of food; it is used for more purposes of cookery than any other agricultural product, and the demand for it is increasing more rapidly than it can be supplied. This is the cause of its recent great rise in price. We have been assured by a large dealer in sugar and molasses, that our Western States alone now consume more sugar than is produced in our whole country; hence we are dependent for the most of that which we use on the West India islands, Cuba especially. It would certainly be of great advantage and benefit to our people if our country produced as much sugar as it consumed and required. This it never will be able to do, we believe, from the common sugar cane, because the climate most suited to its culture in any of the States is not equal to that of the West India Islands—rather—it is not properly adapted to the climate of any of our States. We therefore hope our southern planters will give the Chinese sugar millet full and fair trials, and we hope that it may yet prove to be the source from whence our country will be able to supply itself with an abundance of good sugar, syrup, and molasses.

Photographic Bank Notes.

An artist in Paris, M. Agnado, has succeeded in deceiving the most expert clerks in the Bank of France with photographic copies of bank notes. It was found to be impossible to tell the copied from an original one thousand franc note.

English Patents.

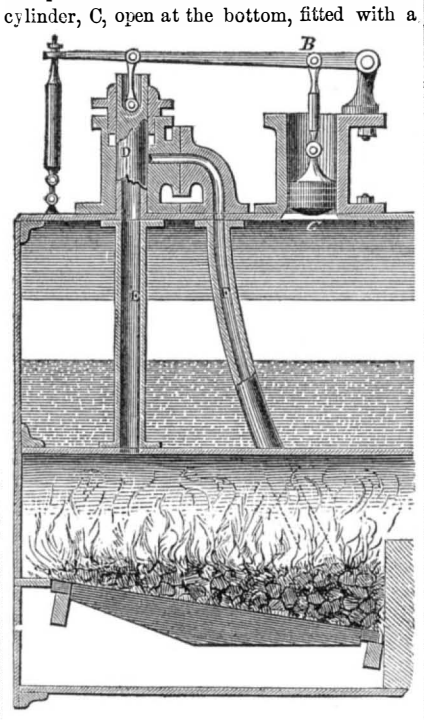
Kidman's Improvement in Tillers or Yokes—This invention consists in making the standing part of the steering rope or chain fast to the tiller or yoke, the rope or chain being then led through side sheaves or blocks to single or double sheaves or blocks in the tiller or yoke, and then through other single or double side sheaves or blocks to the barrel of the steering wheel. By this arrangement, all the slack of the steering rope or chain is taken up, and an additional purchase obtained over those arrangements in which the standing part of the rope or chain is made fast to chocks or carlings at the sides of the tiller or yoke, and not directly thereto. It is preferred with a single purchase to place the after side sheaves in such a position that one shall be abaft and the other ahead of their corresponding sheaves in the tiller when that is hard over, or at an angle of 45°, or thereabouts, with the fore and aft line of the vessel.



In order to take up conveniently the little slack that may result from the stretching of the steering rope, when rope is used, instead of attaching the standing part of the rope directly to the tiller or yoke, it is attached to a screw shackle (or by a lashing, if preferred,) which is connected by an eye bolt or otherwise to the tiller or yoke. By means of this screw shackle, the small amount of slack in question may be readily taken up.

The cut shows a plan of an arrangement, when movable sheaves or blocks are fitted at each end of a yoke. A is the yoke; B is the steering rope or chain; C C are the screw shackles attached to the yoke, A; D D are the sheaves, and E E the single sheaves on the end of the tiller. These latter sheaves are capable of revolving about a pin, F, passing through the yoke, in order that the steering rope may be led more fairly to the side sheaves, D, when the yoke is in any other than the fore-and-aft position.

Hackett's Improved Safety Valve for Boilers.—The object of this improved valve is to secure boilers from explosion. The ordinary safety valves are supposed to be loaded to 50 lbs. per inch. The new valve consists of a cylinder, C, open at the bottom, fitted with a



steam-tight piston, having metallic packings, the piston being exposed to the action of the steam. The top of the piston is pressed down by springs giving a resistance of 80 lbs. per inch. Connected with the piston is a valve, D, for the admission of water from the boiler on to the fire. When the piston is pressed upwards, the valve, D, moves upwards through three times the space of the piston, and by this means opens the communication, F, between the boiler and fire grate. When steam is up in the boiler, the superincumbent pressure of steam would force water into the pipe, F, thus causing a constant flow of water through the valve D over the fire grate. It will appear that when the pressure in the boiler exceeds 80 lbs. per inch, the piston in the cylinder, C, will be forced upwards and open the communication for the water to extinguish the fire, and thus prevent the possibility of an explosion.—[London Engineer.

Cultivation of American Indigo.

The sulphate of indigo (chymic) is used in great quantities for coloring silk and woolen goods, and fine sheepskins. It is the principal coloring ingredient for light blues and greens. It is made by dissolving finely pulverized indigo in pure strong sulphuric acid. The very best of indigo is required for its manufacture, because inferior indigo requires more sulphuric acid while it gives out far less coloring matter, thereby involving a loss of material in connection with an inferior product. All indigo contains more or less lime, but the inferior kind the most; this is the reason why it takes up more sulphuric acid to manufacture an inferior chymic.

At the present moment, and for the past two years, the supply of the first quality of indigo has not been equal to the demand for it, and that demand is constantly increasing. Some very excellent indigo, well adapted for making chymic, used to be obtained from Guatamala, but the kind most esteemed is the first quality of Bengal, for which we are dependent on a colony of Great Britain.—About twelve years ago, the best Bengal indigo could easily be obtained, but at present it is almost unknown in the market. A spurious article, however, much resembling it, is abundent, but it does not possess one half the coloring matter of the genuine, and yet it is sold at a retail price varying from six to fourteen shillings per pound.

Our object is to direct the attention of our southern planters to the cultivation of the indigo plant, and the manufacture of the best kinds of indigo, for inferior kinds are by far too plentiful.

About sixty years ago—and within that period—some very fine qualities of indigo used to be cultivated in South Carolina; its character was much higher than the finest Guatamala or the best Bengal, but it is now unknown in the arts, to the great regret of calico printers, dyers, and leather dressers.—In the fermentation of the indigo plant so much oxygen is absorbed that its manufacture was found to be very injurious to the health of the negroes on the plantations; this was one reason for giving up its culture; and another, and perhaps the strongest, was the higher profits derived from the cultivation of cotton. It appears to us now, however, that with the exercise of sufficient care, the health of the negroes may be maintained as well as in the rice culture; also that the price which could now be obtained for it would be very remunerative. There are hundreds of persons in our country who would rather pay two dollars per pound for the best kind of indigo—that quality which was manufactured at one time in South Carolina, or the kind that was sold for the best Bengal twelve years ago—than that which is now sold for seventy-five cents per pound. We think these considerations ought to induce some of our planters to engage in the cultivation of the finest qualities of indigo.

Since our planters have beat all the efforts of the East India Company to rival them in the cultivation of cotton, it appears to us that their honor is somewhat at stake to regain their lost reputation in the cultivation of indigo.

The golden crops of California are still abundant. The steamer *Illinois* arrived at this port on the 29th ult., with one million and a half of the yellow metal.

A joint stock company has been formed to deepen the Illinois river, and render it navigable at all seasons. This is a commendable enterprise.

The latest accounts from Polynesia describe severe shocks of earthquakes in Hawaii.

Literary Notices.

THE WESTMINSTER REVIEW.—This able Review for the present quarter contains a most interesting, and on the whole, very impartial article on Foreign Missions. It ought to be extensively read and pondered. The Natural History of German Life, etc., Popular Amusements, Froude's History of England, &c., form subjects for other essays. It is a capital number. Published at 54 Gold st., by L. Scott & Co.

THE LONDON QUARTERLY REVIEW, just issued, contains seven very able articles:—Savonarola, Grote's History of Greece, Causes of Civil War, principally based upon the more recent publication of M. Guizot. The Police and the Thieves. Public Works and Improvements of Paris; a charming article for those who have visited this famous city. The Papal Government, and the Disputes with America; in which the writer takes up the cudgel in right good earnest, in behalf "of the sincerity and good faith of our (the British) nation." An Englishmen does not like to admit the possibility of wrong doing on the part of his Government. England is always magnanimous in the eyes of an Englishman. All right—we do not object; but, we do insist upon it, that America and Americans, are not always blindly contending for wrong. We are among those who think there is yet remaining a little virtue and good manners amongst us. Leonard Scott & Co. are the re-publishers of the British Reviews.

BLACKWOOD'S MAGAZINE.—The present number of this veteran Magazine, opens with a criticism on Macaulay's late volume, which is brilliant, but not very pointed The story of the "Athelings" is continued. There is a review of Prof. Aytoun's poem, entitled "Bothwell's," in which it is stated, he is not the editor of this magazine, as has been generally supposed. "India, under Lord Dalhousie," is the best article, we think, in the number; it is full of information. Published by Leonard Scott & Co., No. 54 Gold street, this city.

THE AMERICAN VETERINARY JOURNAL.—This is a monthly periodical devoted to the diffusion of veterinary knowledge, edited by Geo. H. Dod, Veterinary [illegible], and published by S. N. Thompson, Boston. We hail it as a new co-laborer in the walks of science. It is edited with marked ability, and is neatly printed. It contains much sound and useful information, relating to domestic animals, and deserves a very extensive circulation.

UNITED STATES MAGAZINE for September, contains an illustrated article upon the President's House, at Washington. This house is one of the marks of our republican simplicity, inside and out, and if any of our readers are curious to know all about the "White House," let them procure a copy of this Magazine. Future aspirants for this domicil will be anxious to look upon it in picture, if not to embrace its realities. J. M. Emerson & Co., N. Y., publish the United States Magazine.

THE OLD VICARAGE, by Mrs. Hubback, is a novel of an interesting and thrilling character. A sound morality seems to pervade its narratives and conversations. It appears to be a book that may be read with [illegible] and satisfaction. Fetridge & Co., Publishers: New-York an Boston.

THE ORPHAN SISTERS, is an interesting novel by Mrs. Marsh. For sale by E. D. Long, Ann-st., New-York.

Prospectus

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